

digit

FastTrack

YOUR HANDY GUIDE TO EVERYDAY TECHNOLOGY

To Your MOBILE PHONE



More than a phone

Mobile phone features

Mobile phone models

Mobile phone platforms

BlackBerry and iPhone

Android and OpenMoko

Network plans

Mobile phone care

Secret codes



to

Your Mobile Phone

By Team Digit

CORRIGENDUM

In the Fast Track to Open Source Software, on page number 120,

"One of the specialities of the new OpenSolaris operating system is the easy deployment of the operating to different computers on a desktop using an application called Crossbow. The file system used by OpenSolaris is called Image Packaging System."

should be read as

"Crossbow is an application used for Network Virtualization, where a OpenSolaris desktop can be used to consolidate network resource, create virtual NICs and use desktop as a virtual switch. IPS is a package manager for OpenSolaris which allows people to install and manage applications by searching repositories."

— Team Digit

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Introduction

I have always wished that my computer would be as easy to use as my telephone. My wish has come true. I no longer know how to use my telephone.

*Bjarne Stroustrup,
(Creator of the C++ Programming Language)*

We have come a long way from the time when mobile phones were looked upon as items of luxury and were only found in the hands of gentlemen and ladies riding around in a Limo. Today, your local *chaiwala* has one and takes orders on it. In India, with its vast geographical expanse mobiles have become the single most important communication tool. Penetration levels have far exceeded that of colour television, landlines or computers which have been present over here for far longer durations.

The penetration and importance is reflected in the calling rates prevalent in the country, which are among the lowest in the world and hence enabling the *aam junta* to talk to their near and dear ones.

Talking about the present, today they have become *electronic gadgets* in your pocket, which morphs into your PMP, digital camera, your email client on the move or your navigation aid. Therefore, in the first section of this *Fast Track to your mobile phone*, we explore various phones by personality types and typical usage. In the next section, we continue with this theme and present you with some of the best mobile phone models available in the market today with a brief listing of their features and estimated street price. Also, we have mentioned the pros and cons of the each listed model for quick decision making. You will find everything covered from Nokia to Fly in terms of manufacturers and their flagship models.

Physical components alone don't show a lot as to what your phone is capable of, so we have covered the various platforms (operating systems/firmware) that are available and are in vogue with the customers. We have covered the Symbian platform

(Series 40, Series 60 including touch friendly 5th edition), Samsung's TouchWiz UI (available on the very popular Samsung Star model) and the Windows Mobile platform from Microsoft.

It is hard to write words on mobile phones today without mentioning either the iPhone or BlackBerry, and hence we dedicated an entire section to this, even going for a feature by feature showdown of these marvels. Having covered major platforms and devices, we also present a couple of promising alternatives that can hit mainstream in near future. One being the "Android OS" platform initiated by Google which isn't currently available on phones in India, but have got rave reviews internationally. Second is the "OpenMoko" which is the Firefox of mobile phones, by that we mean the phone's specification, hardware details and software are all available under the open source licence including the CAD designs of the body.

Among the jungle features we shouldn't forget that your phone can make and receive calls too. Hence, we have quickly covered the major advantage and disadvantages of prepaid and postpaid network plans. Your research into buying the phone which suits you best should deserve lasting results to you, and hence we have detailed various methods to protect your phone from wear and tear and environmental damage, including a simple selection of tips to save your phone even after it has taken a dip in the pool.

Our last but not the least section is what shall separate you from the rest at the pool table or prevent you from buying a counterfeit phone. We have covered secret codes used by manufactures that can enable you to check your IMEI number to opening the service menu which can let you hard reset your phone.

Now without causing further delay, let us straight jump to our first section about various phone categories. **d**

1 More than a phone

Today mobile phones are used for pretty much anything and everything except for flushing the toilet. Deciding on which one to buy with the plethora of choices available can be as daunting a task as choosing a life partner. To aid you in that decision, in this section we will categorise the phones into various categories and elaborate on each so you can decide if your phone suits your photographer lifestyle or the clad-in-suit guy image. In the next section, we will mention a few models available in the Indian market of each category along with the estimated street price.

1.1 Camera phones

If you are the person who snaps odd road signs, weird advertisement hoardings or just someone who always wishes to capture the current moment for eternity, your mobile today can offer sufficient imaging capabilities to satisfy casual needs. Things you should look for in phones, with the primary purpose of putting a camera in your pocket are as follows:

- >3 MP resolution (preferably 5MP and above)
- Flash (preferably a Xenon flash)
- Support for external memory card
- Autofocus
- VGA recording capability at 30 FPS

You should ignore the digital zoom ratings.



Capture precious moments

Features straight from dedicated cameras such as face detection and geo-tagging are also being offered by some camera phones today.





For the audiophile in you

1.2 Music phones

One of the first multimedia functions to appear in mobile phones was a music player. Today, we have come a long way and your mobile phone can definitely replace your dedicated music player. Look out for phones with a 3.5-mm audio out jack, so you can use your favourite earphones with your mobile. Also, good music phones have a dedicated audio processing chip, dedicated hardware keys for changing the track or play/pause. A graphic equaliser would be a nice addition to satisfy the audiophile urge inside you.

Neat tricks such as Sony's SenseMe that automatically plays songs according to your mood and tempo, Shake control for changing tracks and Track Identification via applications such as Shazman can be useful additions. Battery life should be another

important consideration. You really don't want to run out of juice in the middle of that favourite track. A word of caution though, one area where music phones can't beat dedicated music players is the storage capacity. Most music phones saturate at 16 GB.

1.3 Gaming phones

Aimed towards teens, these phones offer a portable gaming platform which is sufficient enough to deserve a mention. With dedicated gaming D-pads, multiplayer (via Wi-Fi and Bluetooth), 3D rendering chips, accelerometer-based motion control combined with big titles such as *SIMS 3*, *Age Of Empire 3*, *NFS Undercover*, they have become a serious competitor for the Sony PSP and Nintendo's GameBoy. A physical screen size greater than 2 inches and a fast processor is a must if you want to enjoy the gaming experience. Oh yes, they can do one thing Sony's PSPs can't: make calls!



Phone or gaming console?

1 More than a phone

1.4 Business phones

If you are someone who spends 8 hours a day in a business suit, and want to put a statement in the board room while putting your phone down on the table, or need that ever-so-important email all the time, go for phones in this category.

Here phones should preferably have a full QWERTY keypad for easy email composing and document viewer (for PDF, MS Word, PowerPoint and Excel files). Some phones support direct TV-out and hence you can directly connect your phone to the projector, eliminating the need of carrying your laptop everywhere. Nokia has a whole series (the E Series) catering to phones in this segment. Importance should be given both to the physical screen size and the resolution, to ensure comfortable email/document viewing and a good browsing experience.



Nokia E62, a typical business phone

Towards the higher side we have phones which have 8 MP resolution or more (going up to 12 MP) and have a dedicated image processor, with nifty applications to upload photos instantaneously to share online

1.5 Smart phones

This category of mobiles unlike the rest is primarily determined by the software or the operating system of the phone rather than the hardware it carries. It has an operating system which has a large application support that can easily access the file system



Everything that a mobile device can/should do



(your third-party apps can read and write files) and various hardware devices of the phone. These phones generally come with sophisticated email and organiser features, since they were initially aimed to replace your PDAs, and now your laptops. Windows Mobile and Symbian are the two most popular platforms, with iPhone OS gaining popularity. Though there is no commonly accepted definition of a smartphone, it can roughly be defined as a phone, which has more PC-like functionality in addition to being a phone.

1.6 Style over substance



Stylish, you bet!

If you think a phone studded with precious stones such as diamonds and rubies and having designer labels on them is a joke, think twice. Phones have become an integral part of the style quotient. Mobiles are available now with their primary USP as looks and are available in colours such as bright pink. Mind you, they are

These phones have fairly capable email clients with support for various protocols and some will even have push mail capabilities

not just cheap thrills, phones studded with diamonds and sapphires are available from brands such as Vertu and GoldVish. There are also phones with designer associations such as the LG Prada or the Moto Razr V3 D&G edition. A word of caution, in a manner as understated as possible, these phones don't come cheap. **d**

2 Mobile phone features

There are certain features which affect the choice pan category and can affect your decision while buying a phone.

2.1 Input methods

This decides how you interact with the phone, whether it may be the repetitive press of a numpad, the speed of the QWERTY pad or your gentle touch.

Generic numpad: This is your regular 12-button keypad, available on most phones. This ensures the width of the phone remains in a reasonable limit and it fits inside your tight pocket without any major discomfort and is best for messaging and making calls. Generally available and best suited for non-smartphone users. If you want to use your phone as a phone, go for this.

Full QWERTY keypad: If you are a chronic SMS junkie or business professional, the speed and convenience of a full QWERTY keypad can't be underestimated. It makes composing those long SMS full of relationship advice or the email to your boss a lot more feasible, fast and fun. There are also certain modified versions available in the form of half-QWERTY keypads, where each key corresponds to 2 characters (instead of 3 on a normal numpad or 1 on a full QWERTY keypad).

The downside of a QWERTY keypad is generally either the phone becoming too wide, or the keys becoming too small to type comfortably

To touch or not: Not that there weren't touch screen phones available before the iPhone, but after that they have hit mainstream. Since with the touch screen input method there isn't a real need for a physical keypad, and that space can be utilised for a big screen, it becomes a major advantage. Though speeds of a full QWERTY keypad aren't exactly attainable on a touch screen, the pros of a bigger screen and a wonderful web



Full QWERTY keypad for speedy typing

browsing experience can be an incentive enough. There are phones which offer both a touch screen combined with a regular numpad or QWERTY keypad.

GPS is the most accurate location aware method available on a phone today or any mobile device

2.2 Internet access

In India, there are more mobiles with access to the internet than desktop computers. Mobiles have become an important and convenient way to access the plethora of information and service that the internet has to offer.

There are three primary ways to access the internet on your mobile phone

GPRS: This is the slowest and the most omnipresent way to access the internet. GPRS stands for General Packet Radio Service. You can expect speeds slightly slower than an old rusty dial-up internet connection of around 4-5 kBps. Suitable only for an occasional search or an urgent mail check. Patience is a virtue over here. GPRS with EDGE (Enhanced Data Rates for GSM Evolution) offers enhanced speeds if your phone and network supports it. Most telecom networks support GPRS in major cities. Browsing becomes a lot more bearable, especially with software such as Opera Mini that offer server-side compression of web pages.

3G (3rd generation): Right now one of the hottest topics in the Indian telecom scene, with public sector operators such as MTNL and BSNL offering them and private players joining the scene it can be an important consideration in deciding which phone to buy. Simply speaking from the end-user perspective 3G is the fastest way of browsing the internet with speeds around 200 kBps+, which

Half-QWERTY keypad offers a compromise between speed and size

effectively means you can stream video, download games and applications at much faster speeds.

Browsing becomes a pleasure, and if your phone has a large screen, you'll enjoy your mobile internet experience. Your phone can also act as a Bluetooth modem enabling you to surf the internet on your laptop while on the move. It even supports video calls; so college students, it is time you tidy up your room before you make that call to your parents.



2 Mobile phone Features

Wi-Fi: A lot of new mid-end and high-end phones have this feature. Here connection speed bottleneck is only the internet connectivity of your Wi-Fi connection. On home broadband networks, you can expect to comfortably work with even streaming YouTube videos. It is important to decide if you really need this feature. If your office or home has Wi-Fi network or you spend a lot of time at the airport, it is a must have feature.

2.3 Location awareness

Cell-phone tower triangulation

The feature came to prominence first with the initial generations of iPhone (before the incorporation of GPS), here by using the data available from three nearest cell sites. It approximates your position on the globe. This is the fastest location awareness method, but is also the least accurate. It is technically present in all phones. You just need to have the right application with the right access to phone features to use it.

GPS: If you are in a travelling job and often find yourself in a new city with no idea of directions and a language barrier, buying a phone equipped with GPS and a navigation software can be a worth idea. With the current software versions that have road level navigation and voice support, you can get detailed driving instructions on your phone. A GPS equipped phone with a 2.5-inch screen can work nearly as well as a dedicated GPS unit.

GPS is the most accurate location aware method available on a phone today or any mobile device.

However, be aware that getting an initial satellite-lock can take up to 20 seconds outdoors and more than a minute in a moving car. GPS doesn't work indoors.

A-GPS: This stands for assisted-GPS. Basically, your phone first contacts the nearest network tower and then asks for its current location to narrow down the search. It decreases the time it takes to get a satellite lock.

For those looking for a method where you can navigate without using GPRS/EDGE for loading of maps, try using a Java application called "We-Travel". It has offline maps that can be locally stored in your phone for faster access and no data charges. It has a map package for India too.



A mobile phone, showing WiFi connectivity options



A side by side comparison of dedicated unit vs a mobile phone. With a bigger screens, difference is hardly noticeable



The oh-so-recognized Bluetooth symbol

2.4 Bluetooth

Bluetooth can work with several devices at the same time, greatly increasing its potential. As an example, you can transfer those holiday pictures to your friend's mobile over Bluetooth, while being connected to a Bluetooth headset for making voice calls.

Now there are certain specifications over Bluetooth stacks that require profiles for communicating between two devices. The most popular and relevant being advanced audio



A bluetooth wireless headset, the most common utility of Bluetooth after file sharing

distribution profile (A2DP). This means that if your phone supports A2DP, you can listen to stereo music (both left and right channels) in high quality, via a wireless Bluetooth stereo headset. If you often share photographs and music with your friends, Bluetooth is a useful tool.

It must be noted that the Bluetooth feature in the iPhone is limited when it comes to practical use. The primary function in this case is to support a wireless headset. Applications such as file sharing, isn't possible out of the box. **4**

3 Mobile phone models

Now that we have discussed the various features available on a mobile phone device, and you have made up your mind or have taken the initial steps in that direction, let us get down to some phones available in the market today with their estimated street price.

3.1 Camera phones

3.1.1 Sony Ericsson C905

Pros

- 8.1 MP camera with Xenon and photo flash, exposure metering, face and smile detection, geo-tagging, image and video stabiliser, red-eye reduction, the ultra quick-snapping BestPic mode, and a dedicated macro mode.
- Scratch resistant mineral glass 2.4-inch TFT display.
- Built in GPS with A-GPS support and Wayfinder navigator software.
- Wi-Fi, Bluetooth with A2DP and USB v2.0.
- Good user interface with basic multi-tasking support.

Sony Ericsson C905



Cons

- Video recording is limited to QVGA at 30 fps.
- Display is relatively small, considering the fact that it's a high-end device.
- The build quality could have been better.
- No office document viewer.
- Estimated street price: Rs. 27,300.

3G is the fastest way of browsing the internet with speeds above 200 kbps+

3.1.2 Sony Ericsson W995

Pros

- 8.1 MP camera with autofocus, Power LED flash, geo-tagging, face-detection and image and video stabiliser.
- Brushed metal exterior, solid construction and a comfortable keypad.
- 2.6-inch 256K TFT display (QVGA) – biggest screen on a Sony Ericsson phone
- Built in GPS with A-GPS support, Wi-Fi and Bluetooth with A2DP.
- Walkman 4.0 music player with Shake control and SensMe, FM radio with RDS and a 3.5 mm audio jack-a rarity in Walkman phones. This phone is an unprecedented blend of music and imaging.
- Multitasking support.

Cons

- Image quality is good but not excellent.
- Video recording is limited to WQVGA at 30 fps.
- No DivX/XviD video support. No office document viewer.
- Estimated street price: Rs. 25,000.



Sony's All-rounder

3 Mobile Phone Models



28 mm wide angle lens- A first in mobile devices

3.1.3 Nokia N86

Pros

- 8-MP autofocus camera with dual-LED flash and variable aperture, mechanical shutter, geo-tagging and time-lapse shooting. It boasts of a Carl Zeiss 28-mm wide-angle lens that gives you a 20 per cent larger angle of view when looking through the viewfinder (35 mm).
- VGA video recording at 30 fps.
- 3G, Wi-Fi, built in GPA with A-GPS functionality
- ARM 11 434 MHz CPU, 128MB RAM-The phone reacts quickly, if not instantly, to most commands across menus.
- Dual slide design with dedicated gaming/audio/gallery keys with active kickstand.

- Good audio reproduction quality, 3.5-mm audio jack doubling as TV-out port, stereo FM Radio with RDS and FM transmitter that allows you to broadcast your favourite tracks over a predefined radio frequency.
- N-gage support, 8-GB internal storage and a 2.6-inch 16-M OLED scratch resistant screen (QVGA).
- Built-in accelerometer for UI auto-rotation and a digital compass.

Cons

- No dedicated graphic accelerator for N-Gage games.
- Camera has no features such as face recognition, blink detection or smile recognition. No Xenon flash.
- Image processing algorithm needs to be refined. Noise reduction is too aggressive. Easily susceptible to lens flare.
- Estimated street price: Rs. 23,400.

3.1.4 Nokia N79

Pros

- 5 MP autofocus camera with dual-LED flash, AF assist light and geo-tagging.
- VGA video recording at 30 fps.
- 3G, Wi-Fi and built in GPS with A-GPS functionality.
- 2.4-inch 16M-colour LCD TFT display of QVGA resolution.
- Swappable Xpress-on smart covers (two of them in the box).
- 3.5-mm audio jack, TV out, Stereo FM with RDS and FM transmitter.
- Good stereo speakers and Navi-wheel navigation. The D-pad is amply sized and really comfortable.
- Excellent build quality. High quality materials have been used and that should be



Good package at its price

3 Mobile Phone Models

enough to make the phone quite resistant to the everyday wear and tear.

Cons

- Not the best camera performance. The image processing algorithm has some issues. There is excessive noise and little over-sharpening.
- No dedicated 3D graphics accelerator even though this phone is N-Gage compatible.
- GPS performance is not the best. The interface also lags in a few places such as zooming into images takes eternity.
- Estimated street price: Rs. 14,500.

3.1.5 Samsung m8800 Pixon

Pros

- 3.2-inch 256K-colour TFT LCD touch screen display of WQVGA resolution is big, although a higher pixel density would be highly appreciated.
- 8-MP autofocus camera with LED flash, lens protection, geo-tagging, auto-



Samsung Pixon, front and back face

panorama shot, face, smile and blink detection and digital image stabilisation provides for good photographs.

- WVGA video recording at 30 fps is appreciable specially when comparing it to the Sony Ericsson variants in the same mega pixel camera phones.
- It is probably the slimmest 8-MP camera phone with a good solid construction. 3G, GPS receiver.
- SRS (Surround Sound system) Virtual 5.1 channel with TV out functionality and Bluetooth with A2DP make a good for occasional music also. It cannot compete with phones that have separate audio processing chips but the reproduction is good with SRS.
- Office document viewer and multitasking support complement the high-end device well.
- DivX/XviD video codec support on its big screen is awesome for watching recorded videos.

Cons

- No Wi-Fi and no smart dialling support considering that it's a touch phone.
- For some reason. Samsung decided to go without a stylus compartment that leaves it hanging as a dongle, which is irritating.
- Estimated street price: Rs. 22,000.

3.1.6 LG Renoir KC910

Pros

- 3-inch 256K-colour touch screen TFT display (240 x 400 pixels). We don't understand why both LG and Samsung pack a lower density screen with their camera centric phones than their other touch phones.
- 8-MP autofocus camera, Xenon flash, geo-tagging, face tracking and blink detection. It even has touch focus and manual focus which is something unusual in mobile devices.
- Video recording in AVI format, VGA@30fps, QVGA@120 fps, time-lapse QVGA videos make it one of the best video recording phones among this category.
- Wi-Fi, built in GPS with A-GPS functionality and Bluetooth with A2DP
- DivX/XviD video playback along with its TV out port makes it a good device to watch video feeds and recorded videos.
- Office document viewer and multi-tasking support with a real task manager unlike other phones makes this good for occasional office work.
- Dolby mobile music enhancement, direct video uploads to YouTube and excellent touch optimised image gallery makes this good for multimedia use.

Cons

- Google Maps and YouTube application does not work on Wi-Fi, thus leading to

3 Mobile Phone Models

To capture all those YouTube moments



higher data usage on GPRS and increased bills. Also, they work slow compared to broadband over Wi-Fi.

- Has the looks of the early generation Palm phones.
- Estimated street price: Rs. 35,000.

3.1.7 Motorola Zine ZN5

Pros

- Sleek candybar form factor and a clean, compact design with traces of brushed metal and rubberised plastic.
- Morphing keypad just such as ROKR E8. Once you get used to it, navigating through features becomes very easy and everything becomes available in 3-4 clicks at max.
- 2.4-inch TFT display (256K colours) at QVGA resolution. Superb brightness and contrast with vivid colours.
- Powered by Linux means availability of a wide range of mods and hacks for easy customisation.

- 5-MP Kodak camera with Xenon flash. It is one of the best 5 MP cameras around and produces amazing photo quality and colour reproduction.
- The audio quality is nice and volume level is pretty decent. Bundled earphones sound good.
- WebKit mobile web browser is one of the best mobile browsers. It also supports IM and has a separate email client.
- Call quality is superb with Motorola's patented Crystal Talk noise cancellation.
- Battery life and Wi-Fi reception is good.



Moto's premium

Cons

- Memory card is not hot-swappable so transferring pictures with your laptop takes an extra step.
- Menus need refinement and camera interface can be sorted better.
- Estimated street price: Rs. 15,700.

3.2 Music phones

3.2.1 Nokia 5130 XM

Key features

- 2-inch 262K colour TFT display of QVGA resolution- It offers reasonable image quality with decent brightness and contrast. Good pixel density helps.
- Sleek body design and nice choice of materials offers this phone a distinctly youthful charm.
- Hot-swappable microSD card slot up to 16 GB (1 GB card included) – Enough for all the music you need to carry at one time. Since the screen is on the smaller side, watching videos is not feasible and hence you will rarely run out of space.

Pros

- Excellent audio quality easily rivalling dedicated music players.
- Dedicated music keys and appealing music light effects.
- Standard 3.5-mm audio jack, Stereo Bluetooth (with



Replacement for your iPod

3 Mobile Phone Models

A2DP) and Stereo FM radio with RDS.

- Up to 21 h of dedicated music playback.

Cons

- Mediocre camera with no flash or auto focus, sluggish.
- QCIF video recording (only good for MMS).
- No stereo loudspeakers.
- No Java multi-tasking, no office document viewer.
- Flight mode is implemented using a Profile instead of offering it a stand-alone entry in the menu.
- Estimated street price: Rs. 5,400.

3.2.2 Nokia 5800 XM

Key features

- 3.2-inch 16M-colour TFT LCD 16:9 touch screen display (360 x 640 pixels)- good resolution and massive display is a treat to the eyes.
- Dual band 3G, Wi-Fi, GPS with A-GPS functionality.
- Ships with an 8-GB microSD card. Expandable to 16 GB.
- 3.2-MP autofocus camera with dual-LED flash and VGA video recording at 30 fps.
- Accelerometer sensor for automatic UI rotation and motion-based gaming.

Pros

- Best audio quality from the company and possible any other mobile phone manufacturer to date.
- 3.5-mm standard audio jack, FM radio with RDS, Bluetooth with A2DP.

Cons

- Some-what poor touch sensitivity and an immature UI.
- Limited third-party software availability for Symbian S60 5th edition.
- Poor image quality from the camera and web browser is not polished for touch screen use.
- Estimated street price: Rs. 16,500.

3.2.3 Sony Ericsson W595

Key features

- 2.2-inch 256K-colour TFT display of QVGA resolution.



Big screen wonder

- Quad-band GSM and 3G support.
- Modern looks, metallic accents, comfortable keypad and a nice sliding mechanism.
- 3-MP camera.
- 2-GB M2 memory card included.
- Multi-tasking support.

Pros

- Walkman 3.0 music player with Shake control and SensMe (a propriety music mood and tempo detection system) provides an excellent and personalised music experience.
- Good stereo loudspeakers and dual 3.5-mm stereo jacks on the headset cable lets you share your favourite music and playlists with your friends.
- FM radio with RDS, Bluetooth with A2DP.



Stylish mid-range music device

Cons

- Relatively smallish screen. Cannot be used to watch videos.
- Camera lacks auto-focus. Video recording is bad and can only be used for MMS.
- No Office document viewer.
- Estimated street price: Rs. 12,600.

3.2.4 Motorola ROKR E8

Key features

- 2-inch TFT display with 256K colours (320 x 240 pixels)
- Modeshift morphing keypad which transforms the device from phone to music player to imaging device with the touch of a button.
- The haptic-enabled touch-sensitive keypad offers commendable feedback.
- Sleek candy-bar design

Pros

- Good quality music with both clarity of sound and the volume output.
- Omega navigation wheel to scroll through songs, contact and image library with

3 Mobile Phone Models



Motorola Rokr E8, music phone

the slide of a thumb.

- Good format support and rated music playback time of over 15 hours.
- 3.5-inch standard audio jack, Bluetooth with A2DP.

Cons

- Small screen. Bad sunlight visibility.
- The navigation controls do take acclimation.
- Haptic feedback can never be as good as tactile feedback.
- Estimated street price: Rs. 12,500.

3.2.5 Samsung M7600 Beat DJ

Key features

- 2.8-inch 16M-colour AMOLED touch screen display of WQVGA resolution.
- OLED is as good as it gets on a mobile device.
- 3.2 MP autofocus camera with LED flash and VGA video at 15 fps.
- 3G, built in GPS, accelerometer for auto-rotate.

Samsung M7600 Beat DJ, with scratch plate



- Proximity sensor for auto screen turn-off.
- Smart dialling and Office document viewer.
- Rounded edges and unique styling makes it a must-have gadget for the younger crowd.

Pros

- BeatDJ app for scratching and sampling.
- Stereo FM radio with RDS, FM recording, stereo Bluetooth with A2DP.
- DivX/ XviD video playback support.
- Standard 3.5-mm audio jack.

The filters and samples in the DJ mixer application do a good job.

3 Mobile Phone Models

Cons

- Scratching is very basic and needs significant improvements.
- UI lags normally and has lots of glitches.
- No virtual on-screen QWERTY keyboard - unusual for a touch screen device.
- Music reproduction is poor compared to other music phones.
- Estimated street price: Rs. 15,500.

3.2.6 Sony Ericsson W980 Walkman

Key features

- 2.2-inch 262K-colour TFT LCD display of QVGA resolution.
- External 262K-colour display with a resolution of 176 x 176 pixels
- 3 MP camera.
- 8 GB of onboard memory
- Touch-sensitive keys. Great user interface.
- Comfortable keypad. Ambient light sensor.
- Good battery life.

Pros

- Impressive sound quality. Great device for audio-philes.
- Won the EISA award for Best European Music Phone.
- Funky orange LEDs that blink to the beat of your music
- The phone also comes with a pair of high quality in-ear headphones, so you don't have to bother with any other pair of headphones.
- Dedicated music keys located on the exterior of the clamshell that can be used for controlling your music.
- Walkman 3.0 player with Shake control and SensMe.
- FM radio with RDS and FM transmitter.



EISA award for the Best European Music Phone

Cons

- Camera does not feature auto-focus or flash lights.
- Key placement could have been better.
- Fingerprint nightmare.

- Estimated street price: Rs. 22,000.

3.3 Gaming phones

3.3.1 Nokia N85

Pros

- 2.6-inch 16M-colour OLED display of QVGA resolution – It is a real treat to play games on. It uses less battery and is way better overall because of its better



Nokia N85 Gaming phone with game pad keys

colour accuracy and contrast ratio than normal phones. Visuals in games look slicker and more realistic, the viewing angle is amazing, and the better refresh rate of OLED screens ensures that there isn't any graphics ghosting in fast moving games.

- It has a brilliant dual slider mechanism, which allows you to play games such as a portable game device, with the Dpad in your left hand and the gaming keys in your right. Of course you can change this according to how you wish. The N85 can play games in portrait mode too. These are very well made and have great feedback. Not too hard, not too soft.
- It comes with quite a number of N-gage games preloaded. The Nokia's new N-Gage 2.0 gaming platform is really great with lot of big game developers shifting to the platform and releasing compatible games exploiting the dedicated gaming chip of N85, N81 and N 96. *Fifa 09*, *Resident Evil*, *Need for Speed Undercover* and such big name games run in full 3D graphics and with future editions of N-gage, the platform is surely going to catch up to PSP and Nintendo gaming consoles.
- It supports both native and java titles leaving you nearly endless choice when it comes to gaming.
- 3G, Wi-Fi and built in GPS with A-GPS functionality takes care of all your connectivity and navigation issues. It even comes with 3 months of free voice-

3 Mobile Phone Models

guided navigation through Nokia Maps application.

- FM transmitter, Stereo FM with RDS, 3.5 mm audio jack, Navi-wheel navigation to scroll through your playlist and great sound quality makes this a good device for listening to music also.
- 5 MP autofocus camera with dual LED flash, AF assist light, manual lens cover and VGA recording at 30 fps makes this an all-rounder bringing it other N-series royalties and merging it with N-Gage platform.
- 8 GB memory card is included in the retail package and it is expandable to 16 GB.

Cons

- The OLED display doesn't have the best sunlight visibility and road-warriors will find it hard sometimes.
- Camera performance is not at par with what it boasts of. Zooming in takes ages.
- Navi wheel does not feel good. It does not always work too.
- No office document editing out of the box.
- Estimated street price: Rs. 22,600.

3.3.2 Sony Ericsson F305

Key features

- 2-inch TFT LCD (176 x 220 pixels) with 262K colours offers decent image quality even with its low pixel density.
- Two dedicated gaming keys and one key to access your game folder. It also ships with a wrist strap lanyard for gaming.
- Built in motion sensor. However, it is only usable in three games – Jockey, Bowling and Bass Fighting as it stands now. The ten pin bowling simulator is especially fun as you need to do the same motion you do while actual bowling. While it doesn't allow you to see the screen and adjust your direction and stuff, it's funny and pleasing and you will definitely end up wasting count-less hours on it.
- There are 61 games on the 512 MB memory card that comes with the handset and this range from lifestyle games such as Sims 2 to racing games such as NFS and puzzles. While these might not deliver the stunning graphics and content of the N-Gage 2.0 or the iPhone's games, they are entertaining.
- Button placement is good and keypad has large keys for thumb gaming.
- 2 MP camera which offers passable picture quality.

Sound reproduction is surprisingly good for a mid-range Sony non-Walkman phone and the loudspeaker is clear and gives good volume output.

Cons

- Low resolution screen at its price point.

Sony's Motion gaming: Can it take on the N-Gage?



- Battery life is very low and it dies out sooner than expected.
- Camera quality is bad. Bundles headphones are not typical Sony.
- Slightly expensive when you look at the feature: price ratio. This can be primarily attributed to its motion sensor and being made to cater for the gaming segment.
- Estimated Street Price: Rs. 7,500.

3.3.3 Spice X1

Key features

- Stylish looking handset thanks to its gloss and gunmetal finish. Pretty sturdy too.
- 2.4-inch display at QVGA resolution. The large display is great for videos and games.
- Comes with a separate gaming console which is designed to work such as standard console gaming peripheral. It hooks up to the handset via a 2.5 mm propriety socket.
- The handset supports .Nes ROM files (old 8 bit Nintendo Entertainment system game ROMs). They don't look as good as N-Gage or PSP games but they sure give

3 Mobile Phone Models

you that feeling of nostalgia.

- Dedicated music keys, embossed Nav D-Pad and the two action keys above the display can be used to play games without the Gaming controller peripheral.
- It includes a voice recorder, text file e-book reader and a melody composer in a colourful OS.
- 2 MP camera that does a decent job with sharp colours.
- Yamaha-amplified 3D surround sound provides good audio playback.

Cons

- The earphone slot is propriety which forces you to use its bad quality headphones.
- The Spice X1 runs on an interface similar to those found on Chinese mobiles. No application support. Java support is also shabby.
- The handset supports .NES ROM files with no issues. The thing is that it's also supposed to play Gameboy and Gameboy Color ROMs with .GB, .GBC extensions and also the ambitious Super Nintendo .SMC ROMs. But none of this seems to work well. Some games load and crash, some don't start at all and some behave weirdly.
- Estimated street price: Rs. 7,200.



3.4 Business phones

3.4.1 Nokia E71

Key features

- 2.36-inch 16M colour display of QVGA resolution in landscape mode.
- 369 MHz ARM 11 CPU and 128 MB of SDRAM- enough to handle most business centric applications for S60. It is actually pretty quick and responsive for the processor it has.
- Symbian 9.2 OS, S60 UI with FP1 – It does have some feature pack 2 upgrades though.
- Full QWERTY keypad which is comfortable to use with lots of business-minded shortcuts.
- 3G, Wi-Fi, Built in GPS with A-GPS.
- Excellent construction with a very slim stainless steel cased body. It is possibly the slimmest business phone in the market.
- Remote Wipe feature such as Windows Mobile phones for data security in case of theft.
- Office Document viewer, VoIP support and multiple home screen setups.

Slim and elegant



3 Mobile Phone Models

Cons

- Relatively smallish display with a small resolution makes viewing email attachments painful sometimes.
- Estimated Street Price: Rs. 17,000.

3.4.2 Sony Ericsson Xperia X1

Key features

- Qualcomm MSM7200 528 MHz CPU and 256 MB DDR SDRAM.
- 3-inch 65K-colour WVGA touch screen – it has one of the highest resolution screens on any phone which makes web browsing and email attachment viewing an almost PC such as experience.
- Four-row full QWERTY slide-out keyboard and an Optical track pad.
- 3.15 MP auto focus camera with VGA video recording.
- Exquisite and solid metallic body.
- MS Office Mobile document editor and Opera 9.5 web browser.
- X-Panels interface with a hardware button to switch between them. It increases the productivity by providing an Aero such as experience on your mobile.
- Excellent video playback and audio quality.
- Wi-Fi, built in GPS with A-GPS functionality.

Cons

- It is a tad bulky to carry around in your pocket.
- The display is excellent indoors but has a very bad sunlight visibility.
- The interface is not finger friendly in some applications.
- Estimated street price: Rs. 36,000.

3.4.3 HTC Touch Pro 2

Key features:

- Qualcomm MSM7200A 528 MHz CPU and 288 MB DDR SDRAM and a dedicated graphics chip (64MB RAM reserved for graphics).
- 3.6-inch 65K-colour touch screen WVGA display. It makes web-browsing and watching videos pleasure.
- Five row full QWERTY side-sliding keyboard of brilliant ergonomics
- Active magnetic stylus and a touch sensitive zoom bar such as the ones that some high end Logitech key-boards ship with.
- MS Office Mobile document editor and Opera 9.5 web browser.
- Excellent video playback and a TV-out port.
- 3.15 MP auto focus camera and a built in YouTube client to upload and share.
- Revamped TouchFLO 3D Home screen and gesture controls. It is as good as it gets on a Windows Mobile device.

The mammoth Sony Ericsson Xperia X1



Main Disadvantages

- It is big and bulky to carry around. Something you have to go with for an extra large screen and one more row on your keyboard.
- Sunlight visibility is again bad such as the Sony Xperia X1, something these phones need to pick up from the iPhone.
- Poor camera performance but that should hardly be of concern for business usage.
- Estimated street price: Rs. 44,000

3.4.4 Nokia E75

Key features

- 2.4-inch 16M-colour TFT display of QVGA resolution- it is small to



For the CEOs

3 Mobile Phone Models



Dual key-pad

accommodate the alphanumeric keypad that makes using the device as a phone easier.

- Four-row side-slide QWERTY keyboard with a standard alphanumeric keypad.
- 369 MHz ARM11 CPU running a Symbian OS with S60 3.2 UI.
- 3.2 megapixel auto focus camera with a dedicated shutter key, geotagging and VGA@30fps video recording
- Office document editor, smart dialling and excellent e-mail setup wizard.
- Steel battery cover makes the phone look elegant.

Main disadvantages

- When you look at its hardware and features, its price-point is rather steep.
- Battery life is not good such as other Nokia E series phones.
- D-pad is tiny compared to even Nokia's mid-range phones. It is very uncomfortable to work with.
- Small screen to accommodate an extra keyboard can be a turn-off for many users.
- Estimated street price: Rs. 23,000.

3.4.5 BlackBerry Bold 9000

Key features

- 624 MHz CPU, 128 MB RAM
- 2.6-inch 65K-colour TFT landscape display with a resolution of 480 x 320 pixels- The display quality is as good as it gets on a BlackBerry.
- Four row full QWERTY keyboard is very comfortable to work with thanks to its irregularly shaped keys.
- Trackball navigation is responsive and easier than d-pad's on Nokia's business phones.
- Office Document editor, good web browser and support for DivX and XviD video playback.
- Smart dialling and good audio quality on the speakerphone provides good telephony functionality.
- 3G, Wi-Fi and built in GPS



BlackBerry's best

Cons

- No video call camera leaves any option of video calling even with 3G support.
- Email support is excellent in BlackBerry phones but without a BlackBerry Internet service account, you are left with no other alternative email support.
- Estimated street price: Rs. 34,990 (with Airtel/ Vodafone)

3.4.6 BlackBerry Storm 9500

Key features

- 3.25-inch 65K-colour capacitive touch screen of 360 x 480 pixel resolution –gives you the iPhone feel as most other touch screen phones are resistive and less finger-friendly.
- Qualcomm MSM7600 528 MHz CPU, 128 MB RAM with BlackBerry OS 4.7
- Landscape virtual QWERTY keyboard goes as close to hardware keys as possible, thanks to its SurePress screen. It's an award-winning propriety technology that adds clickability on capacitive touchscreens and is makes it better than all touch screen phones in this regard.

3 Mobile Phone Models

- Good solid build quality makes this phone look very elegant for a business professional.
- Document editor and web browser are optimised for its screen and work well.
- Audio quality is good and it even comes with a standard 3.5 mm audio jack for occasional music.
- 3G and built in GPS with BlackBerry maps work very nicely on its big touch friendly screen.



iPhone killer?

Cons

- No Wi-Fi is a big deterrent for most business users.
- Interface is some-what slow even for a decent processor.
- No video call camera and same email-support problem such as the BlackBerry Bold 9000.
- It's more bulky than most touch screen devices without a physical keyboard.
- Estimated street price: Rs. 28,000.

3.4.7 Samsung INNOV8

Key features:

- 2.8-inch 16M-colour TFT display of QVGA resolution
- 8 megapixel camera with mechanical shutter, automatic lens cover, dual Power LED flash, digital image stabiliser, geotagging, auto panorama shot, face detection, smile detection, blink detection. This is for the occasional photographer in you.
- VGA video recording at 30fps and slow-motion video recording
- Wi-Fi, 3G and built in GPS with A-GPS capability
- Stereo speakers, DNSe audio technology, 3.5 mm standard audio jack and TV out ensure you get good music to relax at the end of a hectic day.
- Abundant internal storage (8/16 GB) ensures you never run out of space for your DivX videos which this phone supports.
- The user interface is good and responsive.

Cons

- Bulky construction and built in accelerometer does not respond as expected. Also the Main menu and Home screen does not support landscape mode.



The 8 MP shooter from Samsung, INN0V8

- No xenon flash to accompany its superb camera is probably the only reason this phone found its place here and not in the camera phones category.
- No smart dialling or ability to edit Office documents such as most other business phones.
- Estimated street price: Rs. 25,000.

3.5 Smartphones

3.5.1 Samsung Jet S8000

Key features:

- 800 MHz processor is as good as it gets in terms of raw processing power on mobile devices. It comes close to some ultra-light netbooks in fact in this regard.
- 3.1-inch 16M-colour resistive AMOLED touch screen of 800 x 480 pixel resolution – Good pixel density, OLED make it a complete multimedia monster.
- 5 megapixel auto focus camera with dual-LED, Geotagging, image stabilization, face detection, Smile Shot, Wide Dynamic Range (WDR) is a high end snapper. D1(720 x 480 pixels) video recording at 30fps is also new on mobile phones

3 Mobile Phone Models



Better than your old PC.

- Latest TouchWiz 2.0 UI with Motion UI and Media Gate 3D combine the best of 3D cube UI functionality and iPhone's menus.
- 3G, Wi-Fi, GPS receiver.
- Web browser has full Flash and Java support- a rarity in mobile handsets.
- DivX/XviD video playback support, TV-out, DNSe and SRS sound effect make it a great music and movie package.
- Built-in accelerometer for screen auto rotate and turn-to-mute, Proximity sensor for display auto turn-off, Smart dialling make a good communication device.

Cons

- microSD card is not hot-swappable as the slot is under the back cover.
- For all the features it provides, HD video playback would have been a jewel in the crown but that is absent. Hopefully the Samsung Omnia HD fills that gap well.
- Estimated street price: Rs. 21,000.

3.5.2 LG Arena KM900

Key features:

- 3-inch 16M-colour capacitive TFT touch screen of WVGA resolution (480 x 800 pixels). Though an OLED such as Samsung's would have been preferred but it sort of makes up for it with a capacitive finger friendly and vibrant display.
- 5-MP autofocus camera with Schneider-Kreuznach optics, LED flash, geotagging does not make it a camera phone such as the Sony Ericsson C902 but it's pretty good for normal usage. Samsung Jet still beats it in this field though.
- D1 (720x480 pixels) @30fps, VGA @30fps, QVGA fast-motion video and QVGA slo-mo video – For video recording, until Samsung Omnia HD with HD video recording, this is probably the best in the market.
- 3D hardware accelerator chip makes S-Class Touch UI with a 3D cube very snappy. The whole UI brings great functionality and never before seen fluidity.
- Wi-Fi and GPS receiver with A-GPS support.
- Office document viewer for email attachments.
- Multi-touch input – although it's highly overrated, it's still a favourite among users.
- DivX and XviD video playback, Dolby for Mobile audio enhancement, FM radio with FM transmitter for music and movies.



Bring home the videos.

3 Mobile Phone Models

Cons

- Poor sunlight visibility.
- Flash support bad when compared to Samsung Jet
- Records video in 3GP file format only even with its excellent capabilities.
- DivX/XviD support is limited and some files just open as audio.
- Estimated street price: Rs. 23,500.

3.5.3 Nokia N97

Key features

- Slide-n-tilt 3.5-inch 16M-colour resistive touch screen of 640 x 360 pixel resolution – The pixel density is pretty good and similar to its younger sibling Nokia 5800 XM.
- ARM 11 434 MHz CPU and 128 MB of RAM running Symbian OS 9.4 with S60 5th edition UI – There is limited support for this variant of Symbian, but it holds lots of promise specially through Ovi store applications in the coming time.
- Slide-out three-row full QWERTY keyboard. Although a 4 row keyboard is preferred, this is still pretty usable and the phone's tilt design is great for web browsing.
- Web browser has full Flash and Java support something we see in very few phones.
- Nice audio reproduction quality- not as good as 5800 XM but almost comparable to most other music phones.
- 32-GB onboard storage and 16-GB expandable microSD support puts it top in terms of storage among all phones including the iPhone.



Nokia's Flagship N97

- 3G, Wi-Fi and GPS with A-GPS support.
- 3.5-mm standard audio jack and Tv-out to complement its good music quality.

Cons

- Symbian S60 5th edition UI is still immature, lacks 3rd party support and is not as thumb-friendly as some other touch screen user interfaces including the Samsung Touchwiz and HTC TouchFlow.
- No smart dialling, No DivX/XviD support out of box to complement its big screen for video playback.
- Camera is bad for a high-end device.
- Estimated street price: Rs. 31,000.

3.5.4 Samsung UltraTOUCH S8300

Key features

- 2.8-inch 16M colour AMOLED touch screen display with 400 x 240 pixel resolution with anti-scratch surface coating- The pixel density is less but the fact that it's an OLED kind of makes up for it by providing good contrast ratio and lively colours.
- 8-MP autofocus camera with LED flash, geo-tagging, face and smile detection, image stabilisation, wide dynamic range and D1 video @30 fps blurs the line between this being a smartphone and a camera phone.



Touch screen slider

3 Mobile Phone Models

- Build quality is good for a touch screen slider and the alphanumeric keypad provides good feedback. Keys are well spaced out. It allows the user to experience the joy of having a touch screen equipped device without giving up the comfort of an alpha-numeric keypad.
- Stereo FM radio with RDS, FM recording, Stereo Bluetooth (with A2DP), and decent music playback.
- 3G, and built in GPS receiver with AGPS functionality.
- Document viewer is there for basic email attachment browsing.
- Smart dialling and photo contact view saves time while calling and searching contacts.

Cons

- User interface sometimes lags compared to the same UI on other Samsung touch phones such as the Samsung Jet primarily due to a slower processor.
- No Wi-Fi is a big deterrent again such as Nokia N97.
- Memory card isn't hot swappable and it takes time to initialise also for some reason.
- No virtual on-screen QWERTY keypad does not go well with touch screen phones.
- Estimated Street Price: Rs. 21,000

3.6 Style phones

These phones put style over substance, and covering their features with a functional aspect will be inappropriate. These phones are designed for the elite with deep pockets who need another way to flaunt their cash. Read along and drop your jaw.

Hello Moto in style

3.6.1 Motorola Aura

Motorola has come a long way since manufacturing car radios (Moto + Rola). They present you now with a hand-sculpted high end luxury mobile phone 'Aura' costing Rs. 1,11,000. The phone is Motorola's latest high-tier mobile device targeted at the trend-setters. Aura features hand-sculpted richness, stainless steel housing and will also be available in sundry textures and patterns which takes nearly two weeks to complete for each phone. It sports a swivel design reminiscent of the Motorola V70.

Aura is one of the world's first mobile phone with 16 million colour, 480 pixel diameter and 300 dpi resolution. The lens is made of 1.62 carat sapphire crystal, the keypad



is made of aluminium and the swivel mechanism works on 130 precision ball bearings while the gears are tungsten carbide coated. Now this is some custom Swiss engineering inspired by classic watches. The features on the phone aren't all that impressive but since when eye-candy phones ever relied on features anyway?

3.6.2 Samsung F480 Hugo Boss Edition

When it comes to dressing A-List Hollywood celebrities Hugo Boss can compete with the best, and with his competitor design houses such as Armani and Prada associating with phone manufacturers (Samsung and LG respectively) how can the man lag in this department. The touch-operated F480 Tocco gets a generous dose of style and brand equity with its association with the German design house.

The customisation packet is complete with a prominent logo in front, custom themes and even



Boss!

a special selected set of ringtones. The phone is primarily the Samsung Tocco, housing a 2.8-inch touch screen display with a 5-MP camera (camera has autofocus and LED flash). The phone has a very function audio and video player, FM radio. On the connectivity front it is complete with Bluetooth, HSDPA and 3G support. It is available via exclusive dealers and online at an estimated street price of Rs. 45,000. The price tag is one of the reasonable ones among eye-candy phones, thanks to the lack of precious stones. Are we still talking about phones?

3.6.3 LG Prada 2

LG had rebranded their KE850 phone after association with the much valued design house “Prada” as LG Prada. (Obvious, isn't it) LG Prada was the first phone with a designer association to hit mainstream success. It was even positioned price wise in a bracket where it was affordable by some and yet had the exclusivity. LG Electronics and Prada have now launched the successor to the Prada Phone, LG KF900 branded as LG Prada 2.

3 Mobile Phone Models

The second-generation LG KF900 offers a host of many more technological advancement over the earlier version. Minimalism is new fashion statement, is the feeling you get looking at the exterior of the phone. There is a slide out keypad and even the user interface boasts of the latest active flash UI technology and haptic(slight vibration) feedback on touch input.

As it seems to be a standard these days, it a full touch screen phone with 3G capabilities including

HSDPA. On the imaging front there is 5-MP camera with a unique slow motion video capture feature. It supports DivX playback, Wi-Fi and a full HTML browser.

The new Prada also packs Prada ring tones, wallpapers and video clips. In the name of technological innovation along style the phone incorporates 'Prada Link' (LG-LBA-T950), a Bluetooth device that can remotely monitor phone calls as well as read full SMS text messages without having to physically access the phone, which is most probably nicely stored in a Louis Vuitton Bag.

The phone retails with a two year service contract in Europe and even then it costs around Rs. 45,000 which doesn't include the deferred payments of the service contract.



3.6.4 Nokia's Vertu Signature Collection

Vertu, pronounced on the lines of Virtue, is a wholly owned subsidiary of Nokia providing communication devices for the rich and famous. Vertu has achieved a cult status of its own in mere 10 years time (Most luxury brands of legacy of decades) and have become a subject of case study on creating Brand Equity.

This extremely high-end hand crafted mobile phones in the signature collection comes in three flavors namely, stainless steel, hallmarked white gold and yellow gold.

The keypad is embedded with 4.75 carats of solid ruby and is a patented design. Attention has been paid to the details, even the SIM drawer has been delicately engraved with a unique Vertu pattern.

Crafted by hand in the territory of Great Britain, these phones sport a vibrant

QVGA OLED display of 320x240 pixels, Wi-Fi, Bluetooth, 3G and can have sophisticated Email and VoIP capabilities.

Stopping at nothing but perfection the gold or platinum Signature phones are authenticated by a Swiss Assay Office hallmark, as of writing the issue they are the only electronic product to carry the hallmark. The sapphire screen cover is scratch-free and needs to spend

two weeks in a furnace operating at 2000 degree Celsius. Even the tones produced by Signature are taken from a piece of music composed especially for Vertu by the Academy Award winner Dario Maranelli.

Hold your breath cause now we reveal the prices of these beauties, Vertu Signature in stainless steel costs Rs. 6,46,000, yellow gold comes for Rs. 17,67,000 and the white gold phone is available for Rs. 19,71,000.



Jewels that make calls

3.7 More phones

Now we shall cover 3 phones which may not top their respective categories in terms of features, but offer value for money. They are in the price range of Rs. 5,000 – Rs. 7,000.

3.7.1 Nokia 3120 classic

Key features

- 2-inch 16M- colour QVGA display. Picture quality is praiseworthy. Given the price range, even the smallish display is above average.
- Text friendly keypad with large keys and solid tactile feedback.
- 3G with video calling at its price point is unmatched.
- 2 MP camera with LED flash. Good colour rendering.
- S40 5th edition user interface with rich preinstalled content. Active stand-by is available as an option unsuch as Nokia 5130 XM similar OS. There is also no lagging or hold-ups.

3 Mobile Phone Models

- Very good battery.
- A volume of just 60cc and weight of 85 grams makes this phone very compact, lightweight and pocketable.

Cons

- Slow camera and unimpressive image quality.
- Weak backlighting takes getting used to.
- Memory card is hot-swappable but it resides under the back panel and its very uncomfortable to change.
- Estimated street price:

Rs. 7,190



3.7.2 Samsung B2100

Marine

Key features

- Hardcore rubberised Urethane shell. This handset is rated to withstand rain, dust, shock, water, vibration and extreme temperatures. It is the perfect phone for beach, outdoor sports and for trekkers, mariners, military people and the extremely careless guy next door. It has been tested under specifications defined by US Department of Defense with Military Standard 810F.
- UI is funky and the File system explorer works is easy to work with.
- Quick flick flashlight helps you in navigating through dark areas and for occasionally finding the Light switch in the middle of the night.
- FM Radio, good music player and loud external speakers.
- 1.3 MP camera is good at its price point.
- Good battery life to last long in the wild.

Cons

- Small screen. Low resolution.
- Slightly bulky design.
- Estimated street price: Rs. 5,600.

Affordable 3G phone



Throw me around

3.7.3 Motorola A810

Key features

- Runs on Linux. Brings the functionality of music oriented ROKR phones in a more affordable package. It can also be customised and hacked to mod features.
- Simple and basic design aimed at youngsters. Solid construction.
- 2.2-inch QVGA touch screen LCD with excellent picture quality, good brightness levels and colour reproduction.
- 2 MP camera without flash or auto-focus should be acceptable for such a feature rich phone at such low prices.
- Basic music player performs well. The audio output could have been higher volume though.
- Battery life is good.



Tap and go

3 Mobile Phone Models

- Opera Mini performs quite decent and is able to load even full PC pages smoothly given its limited processing power.

Main Disadvantages

- The Call and end keys at the front are not backlit which makes receiving and ending calls in dark painful.
- Volume key works as scroll key if music application is not open in foreground. So you cannot change volume while playing music from any other place including homescreen.
- On screen key-board is tiny. So you have to use the stylus even for most basic things.
- Estimated street price: Rs. 7,400.

3.8 Phones from lesser known manufacturers

We also now present you phones from some lesser known manufacturers, available in India. All these phones though have a unique IMEI number and are legal by law in every sense. Most also come with some warranty.

Intex Ultima I 1170

- 3.2 Mega Pixel Camera with autofocus and flash. TXT file viewer. Stereo Speakers, TV-Out, Bluetooth, FM, Micro SD, GPRS and USB.
- Estimated Street Price: Rs. 10,000

Intex Envy I 1044

- 1.3 MP camera, GPRS and Micro SD Card Support
- Estimated Street Price: Rs. 3000

Intex IN5555

- 2-inch Inch QVGA touch screen, 800mAH battery, FM Radio, Video recording and player, USB enabled, GPRS, Bluetooth.
- Estimated Street Price: Rs. 5,750

Ray T65

- Full Touch Screen, 3 MP camera, MP3 palyer, FM radio
- Estimated Street Price: Rs. 6000



3-inch touchscreen at an affordable price

- Ray mobiles are the in house brand of Mobile Store and service is also available via the same.

Ray T60

- Dual Sim (GSM+GSM), 2 MP camera, 3.0 inch WQVA Touch Screen, Bluetooth, Micro SD, Accelerometer, GPRS, USB, Stereo Speakers.

Micromax X1i

- Ultra Long battery life, Music Player, Dust Resistant Keys, Theft Tracker, Voice Recorder
- Estimated Street Price: Rs. 2000

Micromax X4i

- 3-inch 262K colour QVGA display, Bluetooth with A2DP, Games and Voice Recording. 1300mAH battery. Hardware Numpad with a navigation D-Pad.
- Estimated street price: Rs. 7,500.

Fly Hummer HT1

- 2 MP camera, Data Modem, Bluetooth, USB Port, Micro SD, FM radio, MP3 palyer, Video Recorder, Spare Battery, Opera Mini as browser, email and custom



One for the ladies

3 Mobile Phone Models

hammer theme. Touch Screen with attractive yellow colour, sure to catch attention.

- Estimated street price: Rs. 7,000.

Wespro WM3708i

- GPRS, GSM+GSM dual sim, T-Flash memory card, USB enable, Bluetooth, 3 inch Touch Screen.
- Estimated Street Price: Rs. 5,000.

Wespro WM1503:

- GPRS, GSM+GSM dual sim, 2.6 Inch touch screen, FM radio memory card, USB enable, Bluetooth, expandable memory, 1.3 MP camera.
- Estimated street price: Rs. 4,800. 

4 Mobile platforms

“Those parts of the system that you can hit with a hammer (not advised) are called hardware; those program instructions that you can only curse at are called software.”

Now that we have decent idea as to what hardware features will suit your requirements, it is equally if not more important to select a right software platform for you. There are a lot of software platforms available in the market and an exhaustive overview of each is not possible given the practical constraints. We have picked up the following platforms based on the popularity and significance in the current market scenario.

Symbian Series 40

Omnipresent in nearly all low-end to mid-range Nokia phones. The interface has inspired host of other similar platforms and 3x4 or a 3x3 menu grid found in some of the proprietary interfaces of Sony and LG (low-end to mid-end phones) resemble Series 40 in function, feature and organisation.

Symbian Series 60 with Touch enabled 5th Edition

This was nearly the first real smartphone OS from the house of symbian and is reputed to be one of the most mature ones at that. Nearly the de-facto choice for all Nokia business phones. The latest generation, Series 60 5th Edition, has made it touch screen device ready and has found its way into major handsets such as Samsung Omnia HD, N97 and 5800 XpressMusic.

TouchWiz by Samsung

Samsung with its latest generation of touch screen is eating into the market share of nearly all manufactures. While researching to select the interfaces, we were blown away by the user friendliness of this interface. The best part is that it can also be implemented partly over and above an existing one as in the case of Samsung OmniaHD which runs a Series 60 5th Edition, but comes with the TouchWiz interface to jazz up the home Screen.

Windows Mobile

In any software segment it is hard to omit Microsoft as company. Their version for a mobile device mimics the functionality and use of its desktop counterpart. Also it makes your mobile device compatible with ease with exchange server in the corporate environment. Also in our testing it was the most configurable platform with enough customisation to please anyone and everyone. Plugins such as HTC's TouchFLO and Sony's XPanel interface further enhance the ease of use.

If you have started complaining already about us missing the iPhone OS and

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Blackberry OS don't sweat, we have dedicated the whole of next section towards them as they are far more closely linked to the hardware than the rest. It should be noted that certain features of any platform depends on how a manufacturer implements it on its device, and the review over here is for the purpose of giving you a general idea.

4.1 Symbian Series 40

Symbian's Series 40 (S40) platform is one of the oldest and world's mostly widely used mobile device platform. Series 40 devices mainly consist of Nokia's mid-tier mobile devices that certainly won't replace your laptop, but give you exactly what a mobile phone should.



The main menu of the Series 40 platform

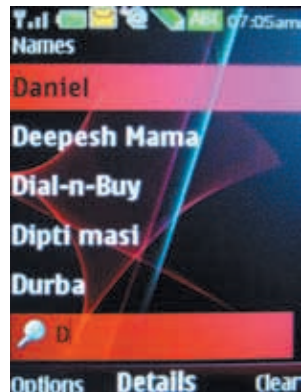
4.1.1 Appearance

Since generally found on device with smaller screen size, (The recent revision supports a maximum of 320x240 or QVGA) it offers a 3x3 and 4x3 grid of icons with or without labels. It is intended for one hand usage and hence the menu items are accessible through keyboard shortcuts. Themes are OS wide and they change the entire colour scheme of the phone. The fact that S40 has been around in the market for such as ever means that there are enough appearance mods available for S40 on the internet. It looks very simple and intuitive and most icons have detailed text associated with it which can be enabled through the settings.

4.1.2 Contact list features

The phonebook on most S40 phones offers space from 1000-2000 contacts. The amount of details submitted for each entry has no limitations except the total counts of phone numbers which is limited to 5. They can further be classified as General, Mobile, Home, Work and Fax. Some models offer another category- video for 3-G network's video calling.

When storing a contact for the first time, you only enter the first name, last name, Home number, Mobile number, email address and an image (if the phone comes with a camera). The rest of the details – Customised ring-tone, video, web



Contact List of S40

address, Company, Job Title, Formal name, Nickname, Postal Address, User ID, Birthday and Notes can be entered by selecting the 'Add detail' option.

There are three view modes for your contact list: Normal Name list, Name and number, Name and Image (which can be switched from the settings menu in the contact book). It can display either the SIM card contacts, phone memory contacts or both. Some phones even provide the option of changing the phonebook font size which is very good on QVGA phones as the space can be utilised better depending on user's preference.

There are 8 speed dial entries which are accessed using the 2-9 buttons and these can be manually assigned. There are no preset groups but you can create upto 25 contact groups with unique group images and tones and these can be subsequently used as call filters.

Searching can be done by gradual typing of the name and entering several letters does not create any nuisance. Keeping # pressed while browsing certain entry in the phonebook brings up a text box with detailed view of the contact.

The contact list synchronises seamlessly with Microsoft Outlook. For transferring contacts to a different device, you are given an option to send the entry as a Business card using MMS/SMS/Bluetooth. This doesn't work well with some non-Nokia devices. There is no option to send the entire phonebook at once (If you select all entries with the 'Mark all' option, the option to send via business card disappears from the menu. However there is a work-around for this. You can go to **Settings > Sync and backup > Phone Switch > Copy from this** and transfer your contacts apart from Calendar events, text messages, multimedia messages and Notes.

No pre-recording of voice-labels is necessary for voice dialling. Also the phones which come bundled with Nokia Maps application have a 'Show on map' option in the Contact details menu.

4.1.3 Messaging Features

Symbian S40 series phones are capable of handling all common message types including SMS, MMS, EMS, IMs, and email. Everything just seems to work perfectly.

Text and MMS use the same editor and all you need to turn a regular SMS into a MMS is insert some kind of multimedia content which

Notes

1. When you enter a birthday date, the corresponding event is automatically created in the calendar
2. Priority-wise video clip is higher than Image so if you entered both for a contact, the video is played back by default on all occasions. Even if you have bound a contact with a personal ring tone, the sound will be taken from the video clip.
3. The photo, bound up with a certain group member entry, has the highest priority and will be displayed instead of the picture applied to the group.
4. One entry can be a member of various groups.
5. On outgoing call the image gets reduced to a small thumbnail, while on receiving an incoming call it occupies the entire screen. The Contact's name is displayed next to number type icon.

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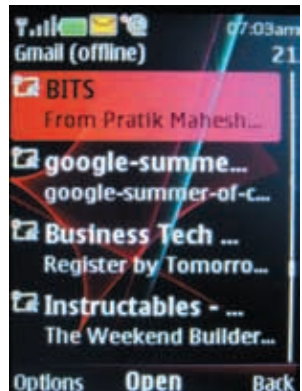
can range from Image, Sound clip, Calendar Note, Business card, theme, Streaming link, Text field or a video clip. As soon as you activate the editor, it displays a field for entering the number of the recipient which you can enter manually or choose from the contacts-list, recently used numbers or the call register which is a very nice feature in case you just want to message some random person who just called you and you don't remember his number, neither do you have an entry of him in the phone book. You even have an option of setting a favourite message contact in case you have frequent correspondence with the same person.

Everything in the editor is intuitive and organised practically. Once you enter the relevant number, you can start typing the message body with the press of a single key. S40 also bundles in a rich T9 dictionary and a range of emotion icons (converted from text in received messages). Message length is generally limited to 1000 words and it displays the remaining word count and the numbers of parts the message will break down into at the top right corner. There is a size limit of 300-600kb for multimedia messages in most S40 phones. However S40 does a good job of scaling down image attachments to fit the size for sending via MMS.

The email-client works with POP3, SMTP and IMAP4 protocols and supports multiple email accounts. Push mail is also offered. Setting up an email account is very simple, even for normal computer-illiterate users. You just have to enter your email address and if it is present in the list of Nokia's popular public email services (over 1000 in count), the handset will automatically fetch the settings for you and configure your account. There is however an option of setting your email account manually in case you want to access your company mail while on the move. You need to provide the necessary SMTP/POP3/IMAP4 details for the same. There is also an option to download just message headers instead of entire messages to save bandwidth and then you can decide on what messages you wish to retrieve after reading the subject and sender details.



Composing a message (SMS/MMS)



Accessing Gmail on a Series 40 platform

While retrieving also, you have an option to retrieve the message with/without attachments. S40 does a very good job at meeting user's requirements in this aspect.

S40 also allows you to create Flash messages (short messages, which are only shown on the recipient's screen, but not saved into the phone's memory) and Voice messages, the option for which comes when you click on 'Create a new message' along with SMS/MMS Message and Email message. Delivery Reports are saved in a separate folder which helps keep the Inbox devoid of clutter.

4.1.4 Multimedia features

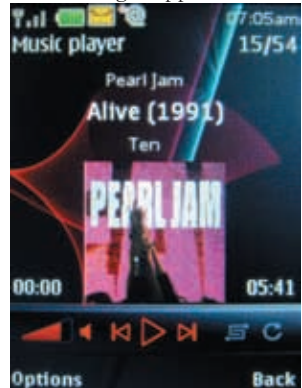
Image gallery

The Symbian Series 40 (S40) gallery functions as both gallery and a file manager which isn't as good as having separate Gallery and File Manager applications. It has three different views : List with details, List and Grid. It allows you to open an image, check file details, sort pictures by name, date, format and size, print using compatible Bluetooth printers or Open in sequence, which is such as a slideshow. The images open in full screen behind text and you can then rotate, zoom, and edit them with the built-in picture editor. It lets you to insert text, insert another image, crop image or set contrast but you will hardly be editing images on most S40 devices due to their small screen sizes.

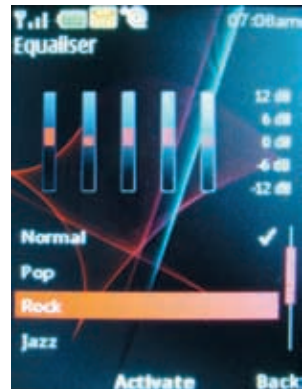
Music player

The music player on most S40 phones feature nice looks that go well with the design of the handsets and good all round functionality, including a good number of formats supported (can vary with different devices) and album art. Some phones such as the Xpress Music series have dedicated music control keys but otherwise too, controlling the music player by the D-pad is good and intuitive. Phones which have Bluetooth with A2DP have an option of playing music through wireless headphones in the settings of the music player. It is customisable through themes that change the look and feel of the application.

The player can sort songs by artist, album and genre. You can even create your own playlists. The sonic experience can be enhanced by an equaliser



Music player with album art



Graphical equaliser on a Nokia Xpress Music phone, running S40

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and a stereo widening expansion function. There are some equaliser presets by default but you can easily modify them to make new ones that suit your taste.

Radio

S40 devices generally come with an FM radio application that uses the audio player interface and provides you with all the required functions. There is an option to scan all stations and save them in a station list. Alternatively you can manually save stations by giving the exact frequency. It can also be customised with themes such as the music player. Some phones even have the option of using radio as the alert for alarm clock. The radio is capable of working in a Loudspeaker mode but most phones require the headset to be still connected as it doubles up as a radio antenna. There is no option to record radio broadcasting to the memory card however

Tip: Press and hold '*' in standby mode to activate the radio application.

To leave the radio playing in the background, press the End key. To close radio, press and hold the End key.

Tip: You can rewind and fastforward by pressing and holding the direction keys. '#' can be used to mute or unmute the music player

Video player

The S40 video player is compatible with 3GP and MPEG4 formats. The fact that it doesn't support H.264 playback limits its usage. However, videos can be played in portrait and landscape(full-screen) mode and you even fast forward and rewind during playback. The full screen viewing experience is nice as the soft-key captions are only visible when you press a key and fade again after a delay giving you the entire screen real-estate.

Apart from these S40 also has a Voice Recorder application which lets you record upto 1 hour of continuous audio and allows you to choose whether to store it in phone memory or memory card.

4.1.5 Organiser

The organiser of S40 does not bring any novelties, but frankly it doesn't need any. It is truly elaborate, and offers a large number of time-management applications with nice features and user-friendly interface.

The calendar offers Monthly, weekly and daily view and you can set-up six different types of



Calendar, with events listed for the highlighted date

events: Reminder, Meeting, Call, Birthday, Anniversary and Memo. Further, each event has its own specific fields such as subject, start and end time, type of alert with various intervals and some of them even allow you to set up an alarm as reminder.

The To-do list is very handy and enables you to sort tasks into three types of priority (high, normal and low), and set due date and time for each task. Tasks can be assigned an alert, as well as marked off once accomplished. They can be easily synced with the calendar application. Text notes are available as well - their length is limited to 3000 characters.

The alarm clock allows setting both single and recurrent alerts, which may trigger on certain week-days. You can also use songs/radio as alert tone. It works even when the phone is switched off. You can also customise the snooze time if you wish.

The other organiser functions available include a countdown timer and a stopwatch which allows getting intermediate values. Both apps can work background mode. There is also a calculator application which can work in Simple, scientific and loan calculator modes. They are all decent looking and easy to operate.



Opera Mini Java midlet running as the browser

4.1.6 Web browser

S40 has an integrated WAP browser, which also manages xHTML pages. The browser hasn't been updated since the 3rd edition of the user interface and lacks functionality of more advanced alternatives. It still offers decent page rendering and font size customisation.

However all recent midrange S40 phones are also equipped with an alternative web browser- Opera Mini. The browsing experience is quite nice and thanks to the image compression it also lowers your wireless data charges. It is far more intuitive and fits text better than the integrated browser.

4.1.7 Settings

Profiles

S40 has various setting groups called profiles, which can customise with ringing tones for different events and environments. Profiles implementation on Nokia's phones is one of the best on the market. Profiles may be activated from this menu or switched by pressing On/Off button. Each profile may be activated for a certain period of time. When the time set for profile expires, the previous profile that was not timed or the default one becomes active. Sound alerts may be adjusted for all

Flight mode (also called flight profile), is a mode that disables all radio communication channels (GPRS, network, Bluetooth, etc) so as not to interfere with aviation systems

the events. You can also easily check if a preset video will work in this profile or not. Also you can assign various sounds to unfolding/sliding open/twisting (for sliders, clamshells and rotate-phones) and set light effects On / Off if your phone has the necessary hardware. The handsets come with four pre-installed profiles and two user-adjustable ones; however each of these profiles can be set up in any desired fashion and even renamed. Flight mode is also applied in some music phones that come with S40 by a Flight profile that disables all radio communication channels (Example: Nokia 5130 XM).

Themes

S40 phones support themes which change the whole look and feel of the User interface including the complete colour scheme, wallpaper, screensaver and Icons. You can choose from a variety of themes that the phone ship with or alternatively you can download them from the internet. Since S40 has been there in the market for a significant amount of time, finding good themes for S40 phones is a cake-walk for even normal users.

Display

S40 allows you to view or adjust the wallpaper, font size and colour, operator logo, cell info display and other features related to the phone display intuitively through this menu.

Date and Time

You can set the date, time, Time zone and the format for date and time through this menu. There is even an option that lets the time of your phone to be automatically updated to local time by the network. This functionality is however network dependent.

Connectivity

This sub-menu retails all settings related to Bluetooth, Infrared (if available), packet data (GPRS and EDGE) and data transfer

Bluetooth

You can configure your S40 phone to be visible for other devices, hidden or available for a set time span. You can also check paired Bluetooth devices and set them to auto-connect.

It even allows you to connect your phone to Bluetooth audio enhancements such as headsets and stereo headphones from this menu.

Packet data

General packet radio service (GPRS) is a network service that allows your S40 phone to send and receive data over an internet protocol (IP)-based network. From this menu, you can define how to use the service : When needed and Always Online. You can even use your phone as a modem by connecting it to a compatible PC using Bluetooth/ wired cable.

USB settings

This menu lets you change the USB mode for your phone from among the following.

PC suite : For connecting to a PC with PC suite installed and using it as an interface.

Printing and media: For sharing media files and connecting it to a PC for printing purpose.

Data Storage: To use your phone and its memory card as a mass storage device and for fast transfer of files to and from.

You can use your phone as a modem by connecting it to a compatible PC using Bluetooth or a wired cable

Call settings

S40 allows you to change your Call divert, Call waiting and Caller ID settings through this menu. Most of the services inside this menu are network dependent. You can divert your incoming calls. Have the network notify you of an incoming call while you are in a call already and choose whether you want to show your number to the person you are calling. The caller ID setting particularly is forbidden by most network service providers in India and can be activated in post-paid connections on extra charges.

Configuration settings

The newer S40 editions come with a new concept, which implies that a whole lot of settings for various services are stored in one place. At first it might feel unusual, but later on you will certainly come to such as it. It just saves a lot of time, since you don't need to browse countless sub-menus to set up generally the same parameters for applications – everything can be set-up in one menu and then used in any app. From this menu you are allowed to configure the following programs:

- Web
- Multimedia messaging
- Synchronisation
- Push to Talk (On certain models)
- Instant Messaging

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- Streaming
- Access point

4.2 Symbian series 60

Moving on Series 60, we shall now concentrate on the differences between the two first, and then we shall continue to give the details of the latest edition of Series 60 which is touch enabled. The usability of all the basic and essential features such as contact list, themes, date and time and the like is pretty much the same between the two platforms. Instead we will highlight unique points of the Series60 platform.

Given that it was designed for relatively bigger screen devices in general as compared to the series 40 (S40 is limited to a maximum of 320x240), the look and feel of series 60 is clearly more intuitive and pleasing to eyes. Rendering of icons is far better in terms of colour and shape. Support for screens as high as 800 pixels in one dimension goes a long way in making a pleasing user interface.

A major difference in the look and feel is the ability of series 60 to further add folders in the main menu. The main menu is scrollable unsuch as the Series40, where you could rearrange the icons within the menu but couldn't add. The screenshot below would illustrate the difference, the MusicApps folder wasn't there by default and the thumb friendly scrollbar is clearly visible in the right hand side.

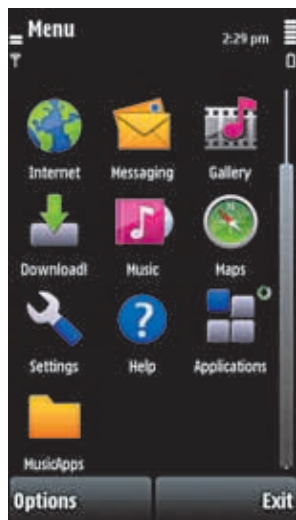
The initial minor difference in the look and feel can be deceptive when it comes to functional and technical difference between the two phones.

4.2.1 MultiTasking

Series 40 was aimed at simpler devices aiming to be a function phone, while series 60 is aimed towards convergent devices aiming to be a mini-laptop. Series 40 had no native multitasking support, though it could support Java applications. However, Java applications have the limitation of a maximum size of 1 MB. (heap size cannot exceed 2 MB). Java applications also lack the ability to work in the background.

Enter Series 60 and in such as true OS style has complete multi-tasking support. Pressing the menu key for extended duration on most devices, bring up the taskbar from where you can switch between the applications and also close them if you wish.

In the screenshot below you can clearly see the Browser, Real Player, Fringe (IM application), ScreenSnap (The utility which is generating the screenshots for this



Music Apps folder is visible in the main menu.

review) and other things open.

4.2.2 Native API

Series 60 unlike its predecessor provides 3rd party applications an API (Application Programming Interface) which allows any application to use each and every hardware and software function of the phone. This means that you can have a 3rd party application to switch on your LED flash without a camera to be used as a torch. In the screenshot you can see that the phone allows the WeTravel (alternative GPS mapping Client) Java utility to access even the GPS hardware and the associated information supported with it in the phone with your consent. Networking, accelerometer, proximity sensor, multimedia, camera, audio and the like can all be accessed and used via 3rd party applications, both writing for Symbian or Java.



Task Manager of series 60.

4.2.3 Communication

Series 60 aims at making the phone the ultimate communication device if nothing else and hence supports Wireless LAN (or Wi-Fi connectivity) and Voice over Internet Protocol (VoIP). Email capability in Series 60 supports for push mail and protocols such as IMAP, POP3, SMTP right out of the box.

4.2.4 Browsing

Series 60 also lets you browse the Internet in a fashion nearly similar to a desktop counterpart. It supports JavaScript and flash, also opening multiple windows is supported. With support for Wi-Fi, A series 60 phone is a real alternative from your laptop for a mail/google/Wikipedia check on the move.

In the screenshot below you can see a YouTube video.

The internet browsing ability can be a key factor in deciding if you choose to go for Series 60 or Series 40 phone. Series60 clearly far ahead and



Plethora of Connectivity options offered by a series 60 application.

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offers a good solution for browsing the internet on the move.

The default browser that comes along with most phones running series 60, has a built in download manager which can be made to work in the background and supports multiple downloads.

4.2.5 The email client

Given the fact that today email has become as important a means of communication as a phone in 1980s, Series 60 pays a lot of attention to it and it shows.

The Client is well developed and can meet almost all the needs of email on the move. Quite a few manufactures add a email settings wizard with built-in settings for most major service providers and setting up say a Gmail email account requires you to just enter your username and password.

The email is nicely integrated within the messaging option of the phone, and you find a seamless experience between composing/reading a SMS or a Email. The platform has support for multiple email accounts and it shows as separate parent folder assisting you to setup your personal and professional email client with ease.

Via the settings menu, you can select if you want to download only the headers or the full email, saving you a lot of money on data charges (if you are using a pay as you use Data Plan). Opening a email after looking at the header, downloads the whole email.

Attachments can be downloaded and with support for music files, video files (limited by default), office documents and PDF files opening them on the phone is also easy. You can compose a email with attachments also.

You can schedule the email to be sent in presence of particular network also, it is there so that you can send your attachment heavy mail in the presence of Wi-Fi instead of the GPRS saving you data charges.

To complete the whole picture there is also the option of adding a signature. The bottomline is if you can think of it, you have that email feature in a series 60 smartphone.



Default browser of Series 60



The same page in over view mode

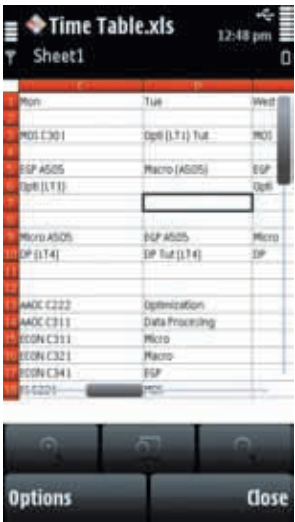
4.2.6 GPS

Series 60 has nice support for GPS hardware and dependent on manufacturer implementation it can also integrate with your camera to support Geo-Tagging, which is the ability to attach the Latitude and Longitude information along with the name of the place (if present) in the EXIF data to the image.

Series 60 doesn't come with its own Mapping application but most manufactures provide some and Google Maps nearly run on every phone. The in-built navigation software does however provide the detailed Latitude and Longitude information along with approximate travel speed and a Compass.

4.2.7 The 5th Edition

Series 60 is considered by many to be one of the most stable and intuitive interface for a smartphone device. So when Nokia decided to finally enter the touch screen device area in a major way (which was surprisingly late) it needed to create a software stack for it. Instead of writing one from scratch, they decided to take the Series 60 as a base and make it touch friendly, and not just stopping at that, they made it finger touch friendly, cause stylus is so yesterday. You can see in the screenshot below 5th Edition running on 640x360 screen in landscape mode makes touch typing a joy with its onscreen keyboard. Combined with the



A Microsoft Excel Worksheet opened with QuickOffice suite. Editing is also supported



GPS-based software compass

Current latitude and longitude

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vibration feedback it is possibly one of the best virtual keyboards to use, easily surpassing the portrait mode keyboard of an iPhone (Yes we know fanboys, iPhone 3G and 3GS supports landscape keyboard) and is equivalent to the ones found in Samsung TouchWiz Interface.

Widget support for the 5th Edition which was missing in one of the first devices using this OS (Nokia 5800 XpressMusic has already been demonstrated in the Nokia N97 and Samsung Omnia HD enabling far better use of the large home screen that most of these touch enabled devices support.

As of now it doesn't support momentum scrolling as found both in the iPhone OS and Samsung TouchWiz, but there have been strong enough rumors to hold your breath, that the next revision will bathe it with the holy waters of momentum scrolling.

There is another glitch and that is the need of double clicking to open an item in a list, but a single click will suffice for an icon or button label. This was done for easy of scrolling (PC-such as) and preventing accidental clicks, but can be confusing for a new user.

It should be noted though, that under heavy use, via personal observation Series 60 5th Edition tends to hang up approximately twice a week. It is an opinion shared by many across devices, but stability has improved considerably since the initial release.

Overall, Symbian 60 5th edition is not one of the smoothest interfaces when compared to TouchWiz and iPhone OS, but with familiarity on its side and major companies launching their flagship phones (Nokia N97 and Samsung Omnia HD) on Symbian 60 5th edition, it looks like a promising one.

4.3 Windows Mobile 6

Taking the reins from Windows Mobile 5, Windows Mobile 6 isn't a complete overhaul of the OS; instead, it offers a number of useful enhancements that makes performing tasks easier and puts more powerful tools into the hands of mobile professionals. It is not the large functional changes that do that, it is the small tweaks in the OS that really perfect some usage scenarios'. WM6 makes your phone easy to use as well as act more such as your PC.

There is the visual appearance which might appeal to a lot of consumers although the number of steps to complete simple tasks is relatively higher in WM6 than other phone operating systems. For the business user the communication and



The landscape keyboard in 640x360 resolution, makes 2 handed operation possible

security have some very good features. Specifically the e-mail application does a lot for the mobile user: e-mail search function, disabling polling while roaming, having HTML e-mail out of the box and Exchange Server 2007 support with advanced features such as viewing the status of meeting attendees. For the business user, the improved security, when used correctly, provides a very decent security level out-of-the-box, providing many road warriors and IT-managers a piece of mind. Availability of Office Mobile on all WinMo devices, Windows Live integration with a much needed Windows Live Messenger overhaul, Windows Live push email support, and Internet Sharing utility to use you Windows Mobile phone as a wireless modem are some other USP's of Windows Mobile 6.

Even with all of these features, we appreciate WM6 most for what it doesn't do, i.e., randomly crash or hang when performing routine tasks. WM6 rarely freezes, and opening and closing applications is surprisingly fast when compared to some Symbian variants. For our overview, we will be focusing on Windows Mobile Standard Edition. The main difference between this and Windows Mobile Professional Edition is in the Office Mobile implementation. Where you can create documents in Professional edition, Standard edition just allows you to view and gives some light editing capability.

4.3.1 User interface and Today screen

Windows Mobile 6 has the glass look and feel of Windows Vista with its similar colour scheme and eye-pleasing icon and larger fonts. The user interface is aesthetically pleasing. This isn't just eye candy. They make the Smartphone OS look less intimidating and more approachable for an average-Joe. The top row of the Today screen is lined with icons that correspond to your most recently used applications. Below that, you'll find information such as time and date. Then there is a

search bar also which comes in very handy. It enables you to launch a Web search without having to open the browser. Scrolling beneath the search bar you'll see upcoming appointments, as well as the number of unread messages. Of course, you can customise the background image, colour scheme, and backlight time.

Nine new email shortcuts so you can easily reply, delete, move messages, and more

One of the biggest complaints about Windows Mobile devices is the number of steps it takes to perform a simple task, such as closing a program. This is still pretty much true of Windows Mobile 6, but Microsoft has taken some steps to ease the pain. For example, the company has added nine new e-mail shortcuts so you can easily reply,



Today's Screen on Windows Mobile 6 Platform

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delete, move messages, and more. You don't have to enter your address book to start searching for the contact you want to call; the Smart Dial feature automatically pulls up contacts as you start typing a first or last name using your device's keyboard or keypad. There is an Internet Sharing utility that allows you to easily set up your phone as a wireless modem for your laptop via Bluetooth, or you can use a USB connection as well. While these are steps in the right direction, there is still plenty of room for improvement.

WM has Voice control as an integral part of OS. It improves the overall usability of your phone. Specially while driving, you can have your phone read out the name of the caller loud and you can even call someone same way without bothering to store voice tags for your contacts. The voice recognition works fairly well.

4.3.2 Calendar and contacts

The Calendar application is very user-friendly. For instance, it provides a good view of your schedule. There is a nifty bar across the top called the Calendar Ribbon (such as Office 2007) that shows you at a glance which time blocks you are free and which ones are booked on a given day. In addition to this, there is a week view, which shows you a more detailed overview complete with coloured blocks for appointments and it actually displays the details of upcoming appointments, such as meeting location, right along the bottom of the screen instead of forcing you to open each coloured block separately. You can view the status of meetings along with attendees and even forward meeting requests. This feature is very handy for a mobile professional and brings more of the PC experience on your WinMo Smartphone.

The contacts application includes call history information for individual contacts, sorted to appropriate contact page. Now this makes it very convenient to track conversations as you can easily see when you received and made calls to a specific person, the time of the call, the duration and so forth over a period of time. There is also a quick Send Text message shortcut so that you can start messaging with a single click, rather than going



Wi-Fi settings



Detailed Calendar view



Smart Search as you type in contact list

through several steps in the conventional way.

4.3.3 Email

One of the most important aspects of a Windows Mobile device is the possibility to check email. Mobile email is an important part of business life: around 33 per cent of mobile users use their mobile phone to retrieve email and around 2/3rds of the executives use mobile email. So a good email client makes a lot of (business) users happy. Email is a lot smarter on Windows Mobile 6 than most smartphones.

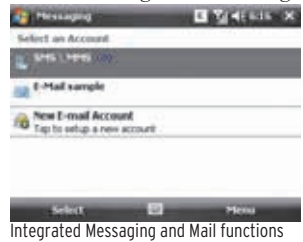
It ships with Microsoft's Direct Push technology so you get real-time email delivery and automatic synchronisation with your Outlook calendar, tasks, and contacts via Exchange Server. You can search even search your company server for emails that aren't stored locally on your device by tapping into Exchange 2007. You can then download individual attachments without having to sit through an entire Send/Receive operation. And Exchange Server 2007-WM6 users will love the fact that they can set their out-of-office message directly from their devices, even if owning a WM6 smart phone means never having to do that.

Exchange users don't reap all the benefits. By moving its database of email settings for various service providers to the web and keeping it always up to date, setting up new accounts is much less cumbersome with WM6, compared with WM5 and is similar to the experience on Nokia's Symbian Smartphones.

Microsoft has also added nine new one-click shortcuts, as we noted above, for flagging, deleting, or moving messages. Just press and hold the H key when you're in the Inbox to see the list of shortcuts at any time. Plus, you get more of the true Outlook experience as your Inbox view shows messages that are flagged, marked as high importance, and so forth.

Searching for e-mails is no longer an unpleasant task such as in previous WinMo versions, thanks to SmartFilter. It works very similar to the Smart Dial feature. Anything that reduces key presses is good. Just start typing while you're in your Inbox and the software automatically displays messages with that key phrase, whether it's a part of the sender's name or in the subject line. It's truly a timesaver and makes finding emails very easy.

There is, of course, support for POP3 and IMAP accounts. The e-mail application also supports and displays HTML e-mails from POP3/IMAP, Windows Live Mail and Exchange 2007 accounts, using the Internet Explorer Mobile engine to show inline graphics and formatting. As always, sometimes you have to scroll horizontally when graphics are wide, but it's a good step. If there happens to be a



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hyperlink within a message, you can select to go to that page or if a phone number is listed, you can dial out directly from that message as well.

4.3.4 Windows Live Services

Windows Mobile 6 puts Live Mail (formerly Hotmail) and Live Messenger literally front and center. If you have a Hotmail/Windows Live email account, you can easily access those messages with Windows Live for Mobile. It's a simple matter of inputting your user ID and password, then you can choose to synchronise your Outlook and Windows Live email and contacts, which integrates nicely into your phone's address book.

We've seen MSN Messenger on Windows Mobile devices in the past, but we have to say Messenger was pretty basic and lame, and we ended up using third party applications. Windows Live Messenger in WM 6 has significantly improved now with the ability to have multiperson conversations, add photos, voice clips, and files to conversations. You also now get emoticon support. This application also integrates with your contacts so you can see who is (and who isn't) online at any given time. The integration works smoothly, and the ability to bring over contacts from an online service lets consumers in on something that's previously been restricted to enterprise customers. However this application does not have a cross-service API that would have supported other popular IM services such as Yahoo! and AIM such as the desktop version.

Another aspect of Windows Live for Mobile is the Live Search (Now Bing), giving you a quick and easy way to search the web. When you first access Windows Live, you are given the option of adding a Live Search bar, as well as Windows Live services, to the Today screen.

4.3.5 Office Mobile

Windows Mobile 6 Standard Edition has the full Microsoft Office Mobile Suite. One of the big criticisms of Windows Mobile Standard Edition was its inability to edit Microsoft Office documents. Whereas Windows Mobile 5 smart phones typically came installed with the Pictel Viewer Suite for opening and viewing Word, Excel, and PowerPoint documents, Windows Mobile 6 brings the real deal so you can not only view the files but also edit them. Office Mobile lets you view PowerPoint presentations and view and edit Word and Excel documents. We should note, however, that the editing capabilities are pretty light.

In Word, editing is restricted to inserting and deleting text, and a few very basic formatting commands such as bold, italic, highlight and underline; there's no font



Office Mobile lets you view PowerPoint presentations and view and edit Word and Excel documents.

or paragraph formatting, nothing rich. In Excel Mobile, there's a neat zoomed-out "overview" mode, basic formula functions and support for multiple spreadsheets, but there's no "new" option in either program so you cannot create documents from scratch. PowerPoint remains pretty much view-only, although you can change playback options.

The new OneNote Mobile, part of OneNote 2007, can create new documents, but it isn't included by default with Windows Mobile 6. We believe most people would be pleased with the viewing and basic editing capabilities in Windows Mobile 6. However, you can get crafty and load a Word/Excel template you can edit and save as a separate file each time. Office Mobile has also been improved to maintain original formatting without affecting tables, images, or text.

Office Mobile lets you view PowerPoint presentations and view and edit Word and Excel documents

4.3.6 Updates and security

A lot of Smartphone users are generally from the business environment. For them, manageability of the phone OS is of vital importance since any data loss can have disastrous consequences. The OS should be up-to date and safe. WM6 is quite secure, stable and manageable in this regard.

Most mobile phone manufacturers take ages to bring updates to firmware and OS. Some don't at all. This results in a lot of problems remaining unidentified and a lot of fixes not implemented at all. Even if your phone manufacturer is quick to release patches, you will have to constantly keep checking its website in hope of not missing anything. Even if you took all the trouble, most updates come in form of firmware updates and you have to hard-reset your phone to update it. Then there is fairly high chance of your phone going dead while flashing after which your only resort was to take it to a service centre which has tools to flash a dead phone. Customer care in India isn't all that good either for most smartphone manufacturers. Basically, its too much trouble. So WM6 has its own Automatic Update feature, such as Windows XP and Vista. You can set the frequency of checking updates automatically or you can manually check and select what updates are essential to you. It works very much such as a Desktop OS and the updates are performed with just a soft reset instead of a hard reset thus ensuring your phone doesn't die out. Plus its user friendly, intuitive and hassle free.

Security is always a concern when it comes to business devices. WM6 has "Remote Wipe" functionality apart from encryption and such other



The counter part of control panel

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concepts to take care of your data's security. If your device gets lost or stolen, Remote Wipe will wipe out all the data from the device as well as the memory card if it is inserted into the device so that it doesn't fall into wrong hands. You can access it through the Outlook Web Access (OWA) interface of your exchange server.

Another major threat to your data is loss of the memory card. It could be taken out of your device and read on a laptop thus making vital company information susceptible to theft. To protect against theft of information in such a way, Windows Mobile 6 brings built-in AES 128 bit encryption of the memory card, replacing third party file encryption applications. If you turn it on, the encryption application automatically encrypts any new information stored on the external memory card. The handling of the decryption of large files has been done well and the access time to information stored on the SD card has a low access time.

However, this application does not encrypt any data already stored on the memory card. So retrospective encryption will not take place. You might assume all their data is safe on a removable medium, but actually is unprotected. Another potential risk is that the rightful owner can be locked out of his own data in certain situations. The decryption keys associated with the memory cards cannot be exported but are lost after a hard reset. This means that if your device gets a (spontaneous) hard reset, you can't read your own memory card. Also, if your device stops working for some hardware problem (this includes dropping your phone in water), encryption implies that you lose access to your own data until the device is brought to working condition which may not happen in a lot of cases.

4.3.7 Support

Microsoft maintains an informative and helpful support site for Windows Mobile 6 users. As it stands now, you can search through a number of help and how-to articles to get you through the basics, such as setting up your device, then delve into more advanced capabilities.

4.3.8 What after Windows Mobile 6?

Windows Mobile 6.1

Windows Mobile 6.1 was announced April 1, 2008 but still does not feature in all Windows Mobile devices. Some vendors such as HTC did provide an update through a new firmware for their premier phones though and all the new Samsung Touch phones with Windows Mobile ship with this variant and a Touchwiz UI on top of it. It is a minor upgrade to the existing Windows Mobile 6 platform which brings with it various performance enhancements, threaded messaging capability and a redesigned Home screen featuring horizontal tiles that expand on clicking to display more information. There are other improvements such as full page zooming in IE , simpler email and Bluetooth setup, a "mobile" version of the Microsoft

OneNote program and an interactive “Getting Started” wizard.

Texting is now such as IM conversations and maintained together in a thread sorted by contacts. You can even view the previous conversation while typing a new message which makes it easier for you to refer to important points you’ve discussed before. There is a new Domain Enroll function that allows you to connect the device to System Center Mobile Device Manager 2008, a product to manage mobile devices.

There are other differences as well. Windows Mobile 6.1 also featured improved bandwidth efficiency in its push-email protocol “Activesync” of “up to 40%”, this reduced data usage was the cause of considerably improved battery life in many devices.

The new Home screen interface lets you put what’s important to you on the Home screen itself ensuring instant availability. It is implemented using a Sliding Panel Home screen where you can dock your clock, appoints and messages, and even your favourite songs, videos and images.

Windows Mobile 6.5 and 7 are planned in the coming future and will be released soon.



The launcher, providing quick access to commonly used features



Composing a message, with handwriting recognition

4.4 The Samsung TouchWiz UI

The TouchWiz UI is based on Samsung’s Croix. Samsung is now using this interface across its entire touch screen line. The TouchWiz UI includes loads of eye candy which makes using it quite a treat but you are free to turn them off if you want an even faster response time. The TouchWiz 2.0 which is available on the newer phones such as the Samsung S800 Jet and Samsung I800 Omnia II comes with some new features such as Motion UI and MediaGate 3D . The 3D Media gate is an intuitive UI which lets you flick your screen for quick and easy access to

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six key multimedia features. The Samsung Motion gate (Motion UI) brings you access to your favorite multimedia features and speed dialing by tapping, tilting or flipping your handset. The Smart unlock feature a.k.a Gesture lock allows you to simultaneously unlock the phone and open a menu item or an application or dial a contact by drawing an alphabet letter on the screen when it is locked.

4.4.1 User Interface and homescreen

This interface is lively, colourful, pleasant and thumbable. Some of the new implementations of the TouchWiz UI such as in the Samsung Star and the Samsung Jet include three separate homescreens that you can alternate by swiping your fingers across the screen. The current home screen is indicated by three small boxes at the bottom of the screen or three thin bars at the top. Each homescreen is separately customisable.

Widgets are applications that you can put on your homescreen. You can also drag around widgets and arrange them as you wish. There are a variety of widgets available such as a calendar, weather monitor, MP3 player and an image gallery. Some Widgets are just shortcuts to applications and there are some widgets that let you configure the others. There are also other useful widgets which help you search for new widgets to download. The number of available

The number of available widgets is increasing as the community grows, the fact that Samsung has released a dedicated software development kit for the TouchWiz UI ensures this

widgets is increasing as the community grows, the fact that Samsung has released a dedicated software development kit for the TouchWiz UI ensures this. These widgets allow you to customise your phone beyond recognition. You can add as many widgets as you want to any of your homescreens. The widgets are on a vertical tray on the left side of the screen. You can open the tray and drag the widgets anywhere on the screen or drag widgets back from the screen to the tray.

The main menu displays as a grid of icons, while the submenus appear as lists. You have a tab at the bottom of the display which holds the three contextual keys with varying functionality according to the currently active menu. There are optional animations and transition effects throughout the interface which are a pleasure.



Homescreen of a Samsung Star

These phones support multitasking, so java applications can be minimised and they continue to work in the background. The taskmanager has a nice 3D view and a classical grid view using which you can alternate between tasks or end them. The end all applications button saves you the occasional hassle of closing applications one by one

4.4.2 Phonebook and telephony

The Samsung Jet and star can hold up to 2000 contacts and the lower end models can hold up to 1000 contacts. Birthdays can be synced to the calendar. Each contact can be assigned a separate ringtone, picture and a note. In the newer phones such as Samsung star and jet you can even set a video as a caller's image, you can also tag each face of each photo to different contacts which makes it easy to group contacts. Searching through photos might not be the most efficient way to find contacts but it sure is fun!

The dialer is normal, as you would expect from any touch phone. The 12 key alphanumeric pad is present on the screen and the bottom tab lets you access the phonebook, delete a character or view more options.

4.4.3 Messaging and Email

The Samsung jet and star have 3 options for typing messages, the regular numpad, an onscreen QWERT keyboard or handwriting recognition. The numpad is good enough, the onscreen QWERTY keyboard is comfortable even for people with big fingers and the handwriting recognition is decent.

The native email client is very good, emailing is a breeze after you enter the



Widgets. Even the operator logo is a widget which can be removed



Main menu

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settings manually. The attachment limit while sending an email is 5MB which is enough for sending documents. If you receive a document as an attachment you will be able to view it seamlessly.

4.4.4 File management

The file browser can display the files and folders from either the phone memory or the memory card or both at once. Even though there are different folders for different types of files such as images, sounds and video you do not need to follow that structure. Wherever you place a file the phone will be able to read it without a problem. You can copy, move, delete, or send files or folders either one by one or in bulk throughout the whole filemanager. The default images, videos and sounds folders can't be deleted.

4.4.5 Music player and FM radio

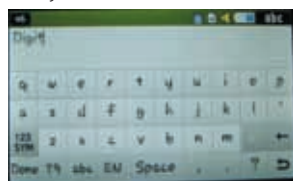
The music player is optimised for touch, you can fast forward, rewind and rate tracks using touch. It allows author, album and genre based filtering. It creates automatic playlists such as recently added, most played and never played. You can also create your own playlists. The music player can be configured as to whether to continue playing in the background. The

The music player widget allows quick access to the music player application with a single tap, it also allows you to start, stop and alternate tracks from the homescreen

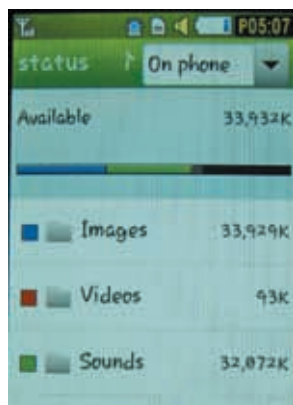
music player widget allows quick access to the music player application with a single tap, it also allows you to start, stop and alternate tracks from the homescreen. The equaliser offers standard presets such as rock, jazz etc.



Adding a new contact



The QWERTY keypad is very convenient to use



The able file manager

The interface of the radio also has intuitive controls and has a service which attempts to identify the current song. Another nice feature is that you can record radio broadcasts. There is a radio widget much such as the music player widget, it allows you to access the radio app or change channels or stop the radio however it can only access saved stations, to tune into a frequency you have not saved yet you will have to return to the radio application.

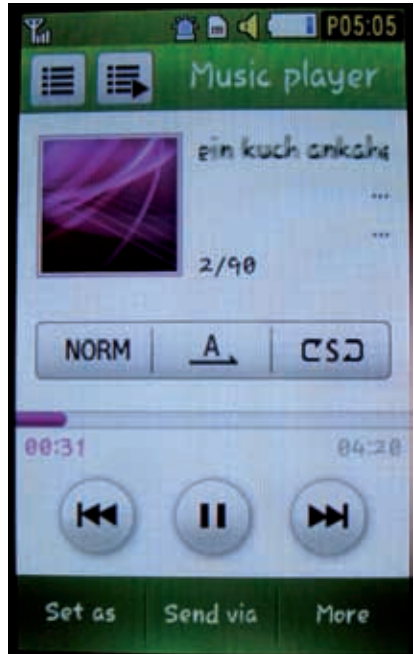
4.4.6 Image gallery and video player

The image gallery is nicely integrated with the file manager. Once you open a picture you can browse through them easily by sliding your finger across the screen without having to return to the picturelist. The gallery has a slideshow function and switches to landscape mode when you tilt your phone.

Similar to the music player, the video player is also touch optimised. The video auto rotates and you can fast-forward and rewind in the same way as the music player. The formats supported and the performances however depend on the phone model, The Samsung jet can play Xvid videos without requiring conversion however the Samsung star can only play MPEG-4 videos.

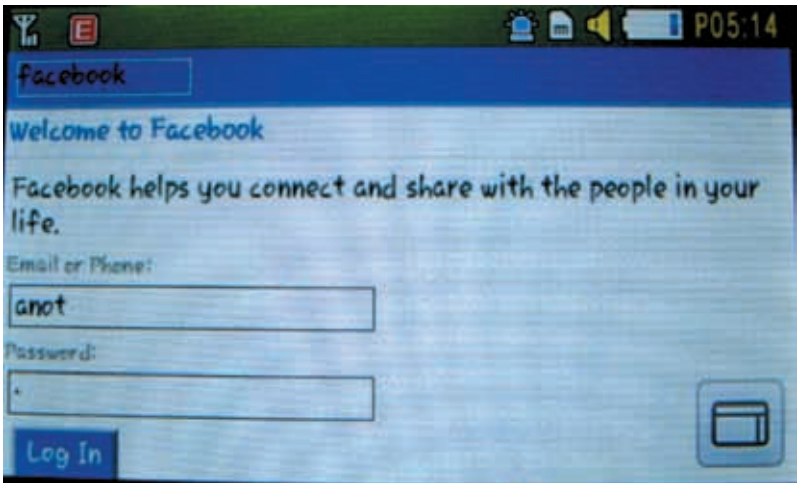
4.4.7 Web browser

The web browser on these series of phones are great, surfing is very enjoyable on it. The web browser can render pages such as on a pc but it is very difficult to scroll around and find what you are looking for in this mode. However it also offers a smart-fit mode which makes the pages fit perfectly on the screen, you can even make the browser go full screen thus making ample usage of the screen's real estate. In some models you can use the volume controller to change page size. The page pilot is such as a minimap which allows you to easily navigate through large web pages. You can scroll through the page by sweeping through the page, unsuch as the Apple iPhone method here the page



The music player in full glory

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Dolphin, Samsung's new WebKit-based browser

moves in the direction of the sweep. The browser is however very smooth and fast and superior to most other touch-operated devices.

The new TouchWiz 2.0 phones include the new WebKit-based browser Dolphin, which was made by Samsung themselves. It has full Flash and Java support and a new one-finger zooming algorithm. Dolphin supports up to 5 web pages to be open simultaneously and it can do multiple downloads in the background. To top it all it has an inbuilt Ad-Blocker. The one-finger zooming is a pleasure to use, although you can also toggle zoom by double clicking on some text or an image. You can scroll through pages by swiping your finger across the screen, the kinetic scrolling feature makes the scrolling more convenient. There is a widget which redirects YouTube videos to m.youtube.com thus you can watch YouTube videos.

4.4.8 Organiser and applications


The calendar included in this series of phones has three views-daily, weekly, and monthly and you can set which view is default. such as most calendar apps you can set the starting day of the week as either Monday or Sunday. You can create events and set their start and end time. You can also set an alarm at the start time of events. The alarms are also very customisable. Up to 10 alarms can be set and each alarm's name, volume, ringtone and repetition days can be customised.

A basic calculator is included, with an on screen numerical and symbol keypad. To-do and memo applications are included for organising tasks and

notes. There is a memo widget which places a memo on the homescreen. However it is separate from the memo application thus typing a memo in one won't bring it up in the other.

A document reader by access is included; it reads Word, Excel, PowerPoint, and PDF documents. Zooming into the documents is slow but reading the documents in landscape mode makes it easier.

4.4.9 Final words

The TouchWiz UI is easy to use and is pleasing to the eye, the interface rarely lags. Even though the interface is similar across all the present Samsung touch screen phones features such as video player and image gallery will perform differently on different models. There are differences in different phones featuring this UI so please research properly about the phone you plan to buy. 

5 BlackBerry and iPhone

These are covered separately from the Operating System review section for the reason explained above, that the performance and functions of the Software OS is very closely linked to the hardware. For example it is not possible to install the iPhone OS on any other mobile phone.

We will first review the iPhone 3GS in detail and then later compare it to the BlackBerry as an alternative to a Business Smartphone. BlackBerry and iPhone both have their dedicated following and a debate as to which one is better is equivalent to Pepsi vs Coke debate. We shall attempt to present the facts in an unbiased fashion and will let the reader form his or her own opinion.

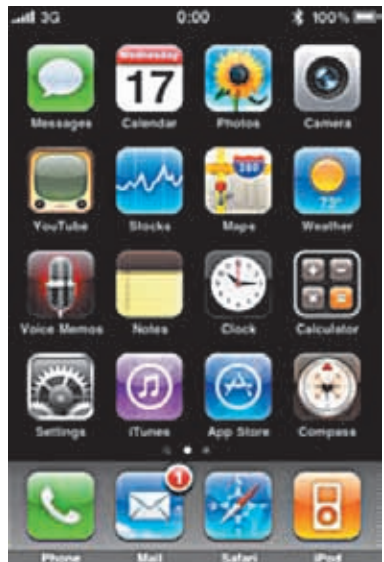
For the iPhone we shall be taking the most recent version, the 3GS, which we will compare to BlackBerry Bold 9000, which is nearly a feature by feature match, at least on paper. We have already discussed the BlackBerry phones in brief in the business section.

5.1 iPhone

The current model iPhone 3GS was launched nearly 2 years (June 19, 2009) after the launch of the first iPhone in 2007. This has given Apple, the parent company, a time window sufficient to iron out most flaws in one of the most popular mobile phone. To begin with let us have a specification and feature overview of the phone:

Pros

- A fast 600 MHz CPU and 256MB ram makes it a noticeably more responsive device than most phones. Initial starting of menus, programs and the responsiveness of screen auto-rotation is very good.
- 3.5-inch widescreen multi-touch display (480 x 320 pixels) with fingerprint resistant oleophobic coating. The display of the iPhone 3GS has great viewing angles, excellent colours and good sunlight visibility. It a treat to the eyes.
- The audio quality of the iPhone 3GS



Default homescreen of iPhone 3GS running OS 3.0

is almost as good as it gets on a portable device. It provides the best sonic experience on the market and that includes its younger siblings- the iPods.

- 3.2 MP camera with Auto Focus and Auto Macro (10cm). VGA resolution (640x480) recording is also supported at 30 FPS.

Cons

- Still lacking in complete multi-tasking support.
- No Flash for the camera.
- No FM radio.

5.1.1 User interface of iPhone

The UI of this device is clearly the USP (Unique Selling Proposition) of the phone. There have been numerous attempts by almost all companies to come up with an iPhone killer mobile, and they have been successful in equalling and even surpassing the hardware features but have failed to come up with the user Interface to match the one provided by the iPhone OS. The most current iteration of the phone OS, which is 3.0, adds a system wide search called the spotlight (yes Mac fanboys, it is the same). Enough has been said about hand gestures such as pinching to zoom in and out of WebPages and photos. Scrolling through any list is a pleasure with the smooth fade in and fade out, and with support for kinetic or momentum scrolling, the amount a list scrolls down or up depends on the speed of you flicking your finger across the screen (in both vertical and horizontal direction). Think of it as rotating a wheel.

Given the improvements in speed brought about with the launch of 3GS, many people argue that S stands for speed. The OS 3.0 and iPhone 3GS is definitely a lot snappier than its predecessors offering the most smooth and intuitive user interface on offer.

5.1.2 Hardware of iPhone

We have mentioned about the 600 MHz processor and ample RAM (256MB) along with the built in GPS and accelerometer and magnetometer. We will now concentrate on the screen which sports a nice 480x320 resolution screen across a massive 3.5-inch display. The pixel density is low but is only noticeable while reading text documents and content heavy websites. The capacitive touch screen is flawless, especially for Indian conditions, where in most places temperatures don't drop below zero and the use of Gloves is not necessary. (You can't use the screen with gloves on as it prevents the electrical conductivity needed to change the capacitance).

The oleophobic coating ensures that grease and dirt do not deposit permanently on the screen and a single wipe across your t-shirt or pants is

5 BlackBerry and iPhone



Phone? Gaming Console? Music Player? Smartphone?

sufficient to clean it completely. The proximity sensor switches off the touch screen during the call when the device is pressed to your ear to ensure there are no accidental clicks via your cheeks. There is also an ambient light sensor present which adjusts the screen brightness according to the environment. At the risk of repeating ourselves, sun light visibility is excellent and far superior to almost all mobile phone screens that we came across while writing this issue.

5.1.3 iPhone as a Phone

For the sake of formality we will cover this also. Reception and audio quality was crystal clear. Also the full black back aids in the GSM reception. Integration with other features is done smoothly, for example during music playback if there is an incoming call, the music gradually fades out and fades in back after the call. Video Calling is still not supported, which is pretty surprising given that the phone is completely 3G capable and as far as downloading is concerned even 3.5G (support for HSDPA). Support for Voice dialling is there. There are dedicated hardware keys for increasing or decreasing the volume during the call. The keys though work system wide for volume control. Apart from video calling the iPhone doesn't disappoint as a phone too.

5.1.4 iPhone as a Camera

As seen in the section detailing camera phones, 3.2 MP is a relatively low count for modern day phones designed to be a substitute for a point and shoot camera. This though doesn't discount the fact that iPhone still produces very decent results which look acceptable even printed at 3x5-inch postcard size paper. AutoFocus (with a tap on screen you can select which

area to focus on also) and Macro mode (till 10cm) is a nice addition, but lack of any form of flash, even a basic LED can be limiting in low light conditions. Geo-tagging is also supported courtesy the inbuilt GPS. VGA recording at 30 FPS is pretty acceptable. Post processing the images and videos is where iPhone excels, there is inbuilt support for editing images and cropping them, the same goes for videos (a feature not commonly seen in most phones). Sharing them online is a breeze with the inbuilt photo and video upload tools for various services such as Flickr, YouTube and FaceBook. During our review, iPhone came second to none when it comes sharing your media online. Viewing the images is a pleasure too, thanks to the multi-touch capabilities which support gestures such as pinch for zooming and panning. Momentum scrolling is also available.

5.1.5 iPhone as a portable gaming platform

A fast 600 MHz CPU, 256 MB ram, PowerVR SGX graphics chip that can handle 3D rendering and support for OpenGL ES 2.0 (used for creating 2D and 3D graphics) make iPhone 3GS a dream device for gamers. Graphics will take a big leap forward both in quality and frame rate because of OpenGL ES 2.0. It can in theory offer console such as experience on the move and has more potential for a rich gaming experience than even Sony PSP.

Mobile developers have been itching to get their teeth into OpenGL ES 2.0 graphics for some time now, yet the technology hasn't quite made it into truly popular handsets. The world's best developers are taking advantage of groundbreaking technology, including Multi-Touch (to give you precise fingertip control over game elements.), the accelerometer (the phone actually responds to your movements, so you can turn and tilt your device to control the action), magnetometer (the phone can be moved along horizontal and vertical axes to control objects), real-time 3D graphics, and 3D positional sound, to create games and applications that come alive in all their glory and are selling them through the App Store.

5.1.6 iPhone as a media player

The monstrous processor and ample RAM ensures smooth playback of even high bit rate videos. Videos are very watchable with the huge screen on offer, Video playback is among the best (supports H.264 codec) and is only seconded by high-end phones designed to be Camera Phones such as Samsung Omnia HD (Which is yet to be released in India). Coming to music playback, audio quality is comparable and equal to the ones found in iPods. Most features of iPods are also supported over here including Gapless Playback and the Cover Flow interface to browse through album by their covers. Cover flow interface is extremely high on bling quotient but doesn't

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really add much to the functionality, but then isn't iPhone, "The iPhone" because of its user interface?

iPhone also has the standard 3.5mm Audio Jack so you can use you're tried and tested earphones/headphones or directly connect it to a speaker system. Support for voice recording is a nice addition in the 3.0 update. Video out via the adapter is supported with the video resolution of 576i and stereo sound. We missed the FM radio feature a bit though. With the maximum capacity of 32GB (one of the highest we have seen in a phone) it can definitely be a potent replacement for your dedicated media player.

5.1.7 Third party applications

One of the primary features which distinguish a good smart phone platform from others is the 3rd Party application ecosystem. iPhone in this area is clearly leagues ahead as compared to the competitors. After Apple openly released the SDK in March 2008, it was lapped up hungry developers. Today if you can imagine an application then be assured it is available in the Apple App Store, which can be accessed via iTunes. Available via the



The fully capable email client at work



app store, there are esoteric applications to provide you with a virtual beer which empties as you drink it (uses the accelerometer) to vanity apps such as I_AM_RICH which costs \$999 and provides nothing but a virtual red jewel on your home screen to useful applications such as Google Reader. Applications such as iZoho (MS office compatible office suite) and iPhoneChat go a long way in extending the functionality of a stock iPhone. There are also alternative websites from where you can also download nearly all the paid applications for free, but you may be voiding your warranties and breaking some laws, so proceed with caution.

5.1.8 Browser, email, text and office applications

Talking about Text Input first, after drawing major flak for not supporting cut, copy and paste in the earlier editions of this device, this revision supports them system wide along with a landscape mode full QWERTY keypad ensuring text input is a joy. Also as compared to iPhone 3G, iPhone 3GS supports the landscape mode system wide. In the ongoing process of mimic real-life gestures (pinching, momentum scrolling) undo feature on the phone is available via a light shake of the phone.

With the arrival 3.0 OS update all normal messaging functions can be performed including forwarding, saving in drafts and MMS. (Yes MMS came that late, only via the 3.0 OS update)

Browsing experience is easily the best on a mobile phone. As a matter of fact it rivals my HCL 7-inch tablet. Though the browser doesn't support flash or java, but YouTube fans shouldn't sweat as there is dedicated application for YouTube which streams the video after converting it into H.264 format. Native support for SVG and CSS is there though. As a testimony to its browsing experience it has been shown by a Nielsen study that iPhone users as a group have the highest percentage of mobile internet usage among all phone users.

iPhone users as a group have the highest percentage of mobile internet usage among all phone users

Coming to email, the iPhone doesn't disappoint, including the Push Mail (via Apple's MobilMe platform) feature. Support for POP3 and IMAP protocol is also there by default. Syncing of mail is seamless with in nearly all permutation combinations including but not limited to Microsoft Outlook, Active Sync, Exchange server and such as.

Opening of MS Office documents (Word, Excel and PowerPoint) and PDF is supported on the phone itself. With landscape full QWERTY keypad and the ability to open attachments along with push mail support we have no complaints from the iPhone when it comes to e-mail or opening office documents.

5 BlackBerry and iPhone

Among other things in this release the battery life has also seen a boost of approximately 20 per cent over the last generation, with the official figures claiming up to 300 hours of standby time and 12 hours of talk time over a 2G network. Voice control feature has also been added, though a cool show-off at the evening out with friends, we can't really imagine a real use of it, except via the Bluetooth headset while driving etc. The digital compass unlike other phones doesn't solely rely on the GPS but has an actual hardware magnetic base, ensuring a pretty reliable reading. The 3.0 OS supports even 3rd party application to access GPS data and is inching towards a complete smartphone platform. The 3.0 iteration has added support for push notifications, where applications when need your attention can pop up a small balloon requesting for action. It is a nice unobtrusive way to keep working while being update about current scene.



The hardware supported compass in action

Conclusion

With iPhone now being officially available in India (Think legitimate support) with its amazing user interface and hardware capabilities, bundled along with the vast repository of 3rd party application can hold its position strong and firm in nearly every department, including the flaunt quotient. So yes, if you can afford it, go for it.

5.2 Showdown time

Display

iPhone 3GS

The iPhone has 3.5 inch screen and a resolution of 320 X 480 pixels at 16M colours. This display is industry-leading stuff with great viewing angles, rich natural and vibrant colours and great sunlight visibility. There is a special



The BlackBerry BOLD in full frontal glory

oleophobic coating on the screen glass, which makes cleaning smudges on the big display easier.

BlackBerry Bold

It is equipped with a smallish 2.6-inch TFT display of HVGA resolution (320 x 480 pixels) to make room for the full QWERTY keyboard. However the pixel count is the same as the iPhone. Even for the fact that the colour count is not at par as it is only capable to show off 65K colours, it has a fabulously bright and vibrant display with good sunlight visibility. The other asset of the display is its landscape orientation. For some reason, they are way more natural to work with.

Advantage: iPhone 3GS

Keyboard

iPhone 3GS

There is no hardware keyboard in the iPhone. There is a virtual keyboard for typing text but it takes time to master the art of typing fast and accurate on a touch screen. The touches are not always registered and it becomes very fuzzy at times. The auto-learning auto-correct software is good but it's still making best guesses about what you 'meant' to type instead of being easy to type what you mean. iPhone does enlarge each key you tap to provide a visual feedback and the haptic feedback is among the best in touch phones.

BlackBerry Bold

Blackberry comes with a full four-row QWERTY keyboard. It does take up some space that could have been used for a larger display, but it more than makes up for that with one of the best keyboards on any mobile device. It is a pleasure to type on it because of its sure and fast response. Except for the space bar all keys are of the same size and are incredibly tactile. Their size might seem inadequate but their irregularly etched shape helps immensely. The shape in question makes the keys feel perfectly spaced, and increases your typing speed.

Advantage: Blackberry Bold

Emailing

iPhone 3GS

Apple definitely got the email interface right with the iPhone. It gives you the ability to control how much email is stored on the device and to easily switch to other Exchange folders. Searching mails is also nicely implemented and it almost always works as expected. All the contacts stay synced and the Calendar function is awesome. The interface is easy enough to use that

5 BlackBerry and iPhone

you can search the calendar and schedule an appointment without delaying a conversation.

The one drawback while working in direct push mode with a hosted Exchange account is substantial battery drain. It's advisable to put it on a 30 minute fetch. The OneNote app for the iPhone is also just right. It organises all your notes in a neat searchable manner and is a big productivity boost.

Blackberry Bold

With Blackberry email, the major problem is the lack of native email support if you are not willing to pay for its monthly premium service. The Bold didn't display HTML email such as the iPhone but I understand that it will come with future firmware upgrades. Scanning messages on it is not as good as the iPhone's.

One good feature about Blackberry is the presence of a blinking light to indicate new email that comes through push mode which saves the pain of constantly checking your email client if you are expecting some urgent mail. The BlackBerry calendar isn't bad but iPhone again scores over it here. It is some-what hard to create new appointments.

Advantage: iPhone

Speed

iPhone 3GS

ARM Cortex A8 processor clocking at 600 MHz and a dedicated graphics chip in the form of a PowerVR SGX Processor. The UI is snappy to say the least and everything opens in a breeze. Auto-rotation is also smooth and responsive.



Snappy

BlackBerry Bold

The Bold uses a 624 MHz Processor which is very fast for its propriety Blackberry OS v4.6. You can expect almost flawless performance with little or no lagging while opening menus, programs or even multi-tasking.

Advantage: Draw

Camera

iPhone 3GS

It has a 3.15 MP Camera with touch autofocus which works very fast and accurate. The camera quality is ok with sharp images and good reproduction of details. The noise level is high though. The absence of a flash hurts.

It can also capture videos at VGA resolution at 30 fps. The video quality, colour and contrast are of very acceptable quality.

BlackBerry Bold

The BlackBerry Bold has a 2MP camera with fixed focus and LED Flash. The noise reduction is excessive here in contrast to the iPhone and almost results in loss of fine detail

Advantage: Apple iPhone 3GS

Storage Capacity

iPhone 3GS

iPhones comes in two models with 32GB and 16GB capacity of internal memory. However, there is no card slot. It comes with 256 MB RAM.

BlackBerry Bold

It has an internal memory of 1GB and External Micro SD cards are supported up to 8 GB. 16GB cards not compatible. RAM capacity is 128 MB.

Winner: iPhone 3GS heads over heels

Application Availability

iPhone 3GS

One word says it all- "App store". Apple has a brilliant platform for 3rd party development and sale through the iTunes app store. It is the easiest platform to develop applications for and you can find applications for almost everything as already elaborated above. However, their strict application acceptance policy is questionable does keep some good apps away from reach such as the Google Voice app recently.


BlackBerry Bold

Blackberry's core API's are outdated and there are hardly any good apps such as for the iPhone. It poses no threat to the Apple in this regard.

Advantage: iPhone 3GS

So considering only core competency area of a business smart phone, Blackberry maintains its own with a landscape screen orientation and a physical keypad, but iPhone is real match (now complete with push

5 BlackBerry and iPhone

notifications) and along with a multimedia phone it can provide all the features needed for a business phone. Loyalties run high in this segment and we will leave the final choice on the informed reader. 

6 Android/OpenMoko

We have covered the present of mobile phones in a lot of detail let us look at the some of the less famous alternatives which have the capability to hit mainstream, or have already become popular in certain regions of the world. We will be concentrating on namely two of them, one being “Android OS” and the other being “OpenMoko”.

The most recent product from Google’s kitty bag, Android was released by Google™ to take on the such as iPhone, Blackberry, Palm OS and latest Windows 6 mods. Seamless integration and a profound web browsing experience are the highlights of it.



Default Homescreen of iPhone 3GS running OS 3.0

6.1 Android

In July 2005, Google bought over Android, Inc., a small startup company based in Palo Alto, California, USA. At that time, very little was known about that company except that it made software for mobile technology. This ran speculations in the market that Google was planning to enter Mobile market. More speculations came in December 2006 when reports from the BBC and The Wall Street Journal noted that Google wanted its search and other applications on mobile phones and it was striving hard to deliver that. Finally on November 05, 2007 the Open Handset Alliance, a consortium of several companies including Broadcom Corporation, HTC, Intel, LG, Marvell Technology Group, Motorola, NVIDIA, Qualcomm, Samsung Electronics, Sprint Nextel, T-Mobile, Texas Instruments and Google was unveiled with an aim to standardise and develop open standards for mobile devices. Along with its formation, the OHA also unveiled their first product, Android, a mobile device platform built on the Linux kernel version 2.6 (monolithic). As promised by Google to keep open standards, Android was licensed under Apache, an open source and free software license.

Android is a software stack for mobile devices that includes an operating system, middleware and key applications. User applications can be developed using Android SDK which supplies a host of API's needed for development using the Java programming language. Salient features of Android are:

Applications

It is the applications that make Google Android really unique. Android ships with a host of applications including an email client, SMS program, calendar, maps, browser, contacts, and others. All these applications are written in Java and run with their own instances of Dalvik virtual machine. Dalvik has been written so that a device can run multiple VMs efficiently. The Dalvik VM executes files in the DEX format which is optimised for minimal memory footprint. The VM is register-based (unlike stack based), and runs classes compiled by a Java language compiler that have been transformed into the DEX format. The Dalvik executables are then modified by the OS again when they get installed on to the mobile device to gain further optimisations, byte order gets swapped in certain data, simple data structures and function libraries are linked inline, and empty class objects are short-circuited to give a much more efficient program run time. The Dalvik VM relies on the Linux kernel for underlying functionality such as threading and low-level memory management. Using Dalvik system makes running and management of processes on a mobile device much more efficient.



Default Homescreen of iPhone 3GS running OS 3.0

One great asset of this OS is the integration with basic Google applications which is excellent. If your primary email client is Gmail, the experience on this OS very similar to how it is on a desktop browser. Gmail, Google Calendar and your contacts can be set to sync automatically so your device is constantly updated.

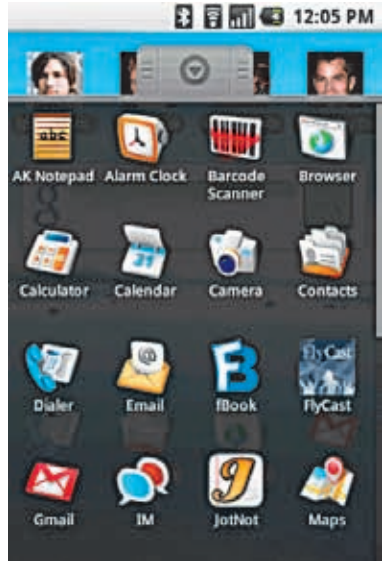
Home

The starting interface of the Android OS is vivid & beautiful and involves a Home screen which can be populated with shortcuts, widgets, a notifications bar and a main applications menu. The Home screen can be spanned into different screens (3 for G1) which you can swipe left or right to find additional free space to put in shortcuts. The applications menu is brought up by tapping on an icon at the bottom of the screen. Pressing the Menu button will bring up a context menu relevant to the application you have opened at the time. The notifications bar appears when you put your finger

at the top of the screen. You can then pull it down to show alerts such as new messages or missed calls.

Browser

The Android web browser 'Chrome-Light' takes its roots from the open source Webkit engine much like its bigger brother - Google Chrome, an instant hit among the masses. Interestingly, Apple's Safari browser is also based on the same platform. Chrome-Light is capable of handling any type of web content (including Flash) that a desktop computer's web browser can handle. This design opens up a treasure trove of possible browser-based services already available to PC users, including contact management, document creation, GPS direction services, and VoIP (Voice over Internet Protocol) services.



Default Homescreen of iPhone 3GS running OS 3.0

Browsing experience on TI's G1 (or HTC Dream) is as good as it can get. The browser interface is slick, the text is rendered beautifully and the rendering is much faster than compared to its native counterparts I.E. and S60 browser. Aside from the lack of multi-touch controls for zooming, the browsing experience on different Android devices is comparable to that on the iPhone. Android has native support for multi-touch, but the feature is disabled at the kernel level (possibly to avoid infringing Apple patents on touch-screen technology). Many unofficial mods have been developed that enables multi-touch, but requires superuser access to the device to flash an unsigned kernel.

Market

Just such as App Store on the iPhone OS, Android's Market is an online catalogue of applications that lets people find, buy, download, and rate applications and other content for mobile phones equipped with the Android OS. This online market gives flexibility to the developer to keep tabs on his applications, review his products ratings, view information about the downloads and comments and manage and publish different applications versions. For the user, they can review and download applications. The best

6 Android/OpenMoko

part is most of these apps are free, unlike iPhone's App store where almost every application is paid.

Contacts

Limited only by memory, the standard contact application uses SQLite to implement its function. In the default contacts application, you can assign photographs, ringtones, groups or star mark contacts. There are several contact applications available in Android market pertaining to different likings and implementations.



A uber-stylish concept Android phone from Alienware

Phone Dialler

Pretty standard with an easy to use interface. Again several mods of it are available on Android market pertaining to different likings and implementations.

Multimedia

Android supports the following audio/video/still media formats: H.263, H.264 (in 3GP or MP4 container), MPEG-4 SP, AMR, AMR-WB (in 3GP container), AAC, HE-AAC (in MP4 or 3GP container), MP3, MIDI, OGG Vorbis, WAV, JPEG, PNG, GIF, BMP.

The default music player on Android is Music. It plays audio, but not video. You can select your music by album, artist, song or playlist, or just shuffle through your entire collection. As expected from Google, the search feature is fast, and quite good. You can scroll through the list of your music simply by sliding your finger through, similar to the iPhone. While listening to a song, you can set it as your phone's ringtone from a simple menu entry. The player supports album art, but only if it's inside the MP3s ID3 tag.

The video player

The video player on Google Android phones, like all video players, is gated by the processor, that is, it is hardware dependent. The video player on

G1 is pretty slick, easy to use and supports H.263, H.264 (in 3GP or MP4 container), MPEG-4 SP, AMR, AMR-WB (in 3GP container), AAC, HE-AAC (in MP4 or 3GP container) formats.

Many free applications are available on Android market which escalate the multimedia experience on Android OS, further videos in almost any format can be viewed using these apps.

To Developers

In Android developers have full access to the same framework APIs used by the core applications. The application architecture is designed to abridge the reuse of components; any application can publish its capabilities and any other application may then make use of those capabilities (subject to security constraints enforced by the framework). This same mechanism allows objects to be replaced by the user. Also, in development of the presentation of the application (UI), Android provides an alternate UI construction model: XML-based layout files. This structure makes it very easy to quickly build up UIs, using a much simpler structure and syntax than the source code. This model is inspired by the web development model, where you can separate the UI from the application logic used to fetch and fill in data. These unique features open up a huge avenue of possibilities for developers. For example, with Android, a developer can easily develop an application that enables users to view the location of their friends and be alerted when they are in the vicinity. Such kind of application will be extremely difficult to build using another OS platforms since control to core system processes is limited in them.

Since most of the Android is open source, vendors are at liberty to modify it. This has greatly empowered the vendors as they can tweak the OS itself to their hardware specifications, which in turn greatly enhances the device's performance. Moreover end users themselves can tweak the applications to their liking.

Android includes a set of C/C++ libraries used by various components of the Android system. These capabilities are exposed to developers through the Android application framework. Mentionable core libraries are:

System C library

A BSD-derived implementation of the standard C system library (libc), tuned for embedded Linux-based devices.

Media libraries

Based on PacketVideo's OpenCORE; the libraries support playback and recording of many popular audio and video formats, as well as static image files.

Surface Manager

Manages access to the display subsystem and seamlessly composites 2D and 3D graphic layers from multiple applications.

LibWebCore

A modern web browser engine which powers both the Android browser and an embeddable web view.

SGX

The underlying 2D graphics engine libraries.

3D libraries

An implementation based on OpenGL ES 1.0 APIs; the libraries use either hardware 3D acceleration (where available) or the included, highly optimised 3D software rasteriser.

FreeType

Bitmap and vector font rendering libraries.

SQLite

A powerful and lightweight (approximately 225 kb) relational database engine (RDBMS) available to all applications. Unlike client-server database management systems, the SQLite engine is not a standalone process with which the application program communicates. Instead, the SQLite library is linked in and thus becomes an integral part of the application program. The library can also be called dynamically. The application program uses SQLite's functionality through simple function calls, which reduces latency in database access as function calls within a single process are more efficient than inter-process communication. The entire database (definitions, tables, indices, and the data itself) is stored as a single cross-platform file on the device. This simple design is achieved by locking the entire database file at the beginning of a transaction. iPhone's OS also uses this library.

Google libraries

These libraries give support for existing Google apps such as Google maps and Gtalk.

Connectivity libraries

Set of libraries to support GSM/EDGE, CDMA, EV-DO and UMTS

Bluetooth, EDGE, 3G and Wi-Fi

Support libraries for Bluetooth, EDGE, 3G, and Wi-Fi. Given, the hardware is found, these libraries will help in implementation and construction of device drivers.

Camera, GPS, compass, and accelerometer

Support libraries for Camera, GPS, compass and accelerometer. Given, the hardware is found, these libraries will help in implementation and construction of device drivers.

Messaging libraries

Support libraries for SMS and MMS messaging. Also include support from threaded text messaging. Number of messages stored in memory is only limited by memory.

Security and permissions

Android is a multi-process system, in which each application (and parts of the system) runs in its own process. Most security between applications and the system is enforced at the process level through standard Linux facilities, such as user and group IDs that are assigned to applications. Additional finer-grained security features are provided through a “permission” mechanism that enforces restrictions on the specific operations that a particular process can perform, and per-URI permissions for granting ad-hoc access to specific pieces of data.

A central design point of the Android security architecture is that no application, by default, has permission to perform any operations that would adversely impact other applications, the operating system, or the user. This includes reading or writing the user’s private data such as contacts or emails, reading or writing another application’s files, performing network access and keeping the device awake.

An application’s process is a secure sandbox. It can’t disrupt other



Default Homescreen of iPhone 3GS running OS 3.0

Most security between applications and the system is enforced at the process level through standard Linux facilities, such as user and group IDs that are assigned to applications

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applications, except by explicitly declaring the permissions it needs for additional capabilities not provided by the basic sandbox. These permissions it requests can be handled by the operating in various ways, typically by automatically allowing or disallowing based on certificates or by prompting the user. The permissions required by an application are declared statically in that application, so they can be known up-front at install time and will not change after that.

Hardware supported

Supports ARM, MIPS, x86 and power architecture micro processor architectures. Has support for camera, GPS, compass, accelerometer, Bluetooth, EDGE, 3G and Wi-Fi. Has support for GSM, CDMA, EV-DO and UMTS.

Current devices using Android

Dell Mini3i, General Mobile DSTL1, Highscreen PP5420, HTC Dream (G1), HTC Magic, HTC Hero(G2), HTC Click, Huawei U8230, Lenovo OPhone, Motorola Heron, Motorola Sholes, Motorola Morrison, Philips V900, Qigi i6, Samsung I7500(Samsung Galaxy), Samsung InstinctQ, Samsung I5700, Sciphone Dream G2 and Sony Ericsson Xperia X3.

Final verdict

Because of the open source nature and the unique OS design, OHA's Android greatly improves the programming scope for developers. It provides at par or better user experience than most OSs out there. Most applications are fast, responsive and seamless. Web browsing experience is particularly good. Even though the software base is less right now, it certainly is the thing to watch for in the future. At least we will be watching!



OpenMoko FreeRunner Neo

6.2 OpenMoko

The second one, “OpenMoko”, is the result of a project aimed at creating the world’s first open-source phone. You may be wondering how the hardware could be open sourced? What it implies is that as far as possible they release the hardware specification, CAD designs, drivers in the open, available to general public. The result of which is that quite a few operating systems (all primarily based on Linux) can run on this mobile including a patched version of Google’s Android. This makes it a very versatile and powerful mobile phone. Mind you, do not underestimate the hardware of this wonderboy, have a look at it yourself:

- A full VGA (640x480) resolution. 2.8 inch screen (one of the highest resolutions on a phone screen).
- 128MB SDRAM memory
- 256 MB integrated flash memory (expandable with microSD or microSDHC card)
- GPS enabled
- 2.5-mm audio jack
- Bluetooth
- 802.11 b/g Wi-Fi
- ARM9 400 MHz ARM processor
- Dedicated 2D/3D graphics hardware accelerators.
- 2 3D accelerometers. (Which effectively means that a couple of months of game software development combined with the 640x480 resolution of the device, it can become a solid gaming device.)



GPS capabilities of a OpenMoko Phone

Tri-band GSM and GPRS

Removable 1200 mAh battery

USB Host function with 500 mA power. This is a feature, not found in nearly any phone, This means that you can directly plug in your pen drive into the phone and read data, or charge your other devices via the USB port.

To get complete hardware details (Yes it is possible, since this is an Open-Source Phone), visit the official hardware wiki at <http://wiki.openmoko.org/>

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wiki/Neo_FreeRunner_Hardware.

The above listed specs are for the second release of the project called the “Neo FreeRunner”, the previous one was called the “Neo 1973”.

Now we turn our attention a bit towards the software stack available for this phone.

The official distribution available for the phone is the “Om Series”. Currently, the latest version is the Om 2009 which is under the testing5 stage right now (was last updated on June 16, 2009 at the time of writing this article) and it already supports most of the features needed by end-users of a mobile such as SMS, calling, phone book, call log, charging, suspend and resume, Wi-Fi GUI, audio profiles and more.

But what is the fun in using the official especially when given that this an open-phone making it the most fertile hacker’s playground. There are more than 10 community developed distributions available for this phone. If it is any pointer towards the capability of the phone, you can install and run the whole “Debian” on your phone, and nearly use all of the packages also (which tend to infinity). This is also supported by the debian community. As a good starting point you can visit the following link <http://wiki.debian.org/DebianOnFreeRunner>.

Android Project is also fully supporting the OpenMoko initiative and already it is possible to run the Android OS on the OpenMoko which is sufficiently capable of daily phone usage needs. In the long run, Android looks such as a strong contender to become the default OS for this Phone. Open hardware plus open software is match made in heaven.

Unlike most bleeding edge technology, this phone is available in India also via IDA systems, one of the official distributors for the phone (<http://www.idasystems.net/>). At Rs. 24,000, it is definitely not cheap, but given the hardware specification and the potential software eco system it may well be worth every penny it asks for.



GPS capabilities of a OpenMoko Phone

The phone isn't without its flaws, a lack of camera can be a deal breaker for a lot of people, but we would really love to own a capable phone (in terms of feature), which doesn't have a camera. Also as of now it isn't really suitable for main stream use and is in the "hacker's dream toy" stage given its open specification. Though running the Om 2008 distribution on it (which uses the Qtopia phone stack), gives it a fairly usable and stable interface. The bottomline remains, if in the yesteryears you were the first guy in your block to learn HTML and think GUI is for chimps and CLI is for ninjas, you better save every penny you own and get this one in your hands. **d**



Don't be surprised, this IS a phone screen only, running full fledged Debian OS

7 Network plans

Including all the fancy features, the fact remains that your mobile is still a device with which you can make and receive calls, and what good is a mobile without a network plan that suits your need. With the options available in the market, it can be a daunting task to find a plan of your choice.

We will be giving a general overview of what to expect from each kind of plan, as the details are very volatile and vary across network operators, but also based on geographical location within one operator.

In the jungle of the options, your first task to find the correct path, is to decide between postpaid and prepaid.

7.1 Postpaid plans

Once you enroll for a postpaid plan, you can use the services (GPRS, SMS, and voice) as much as you want till you hit your credit limit (which in itself is very flexible) and at the end of your month you receive a bill. It is very analogous to your electricity connection, where there is no initial set limit on the usage, and at the end of your billing cycle you are presented with a bill.

These kinds of plans save you from the hassle of refuelling your network connections with top-ups and recharges, and at the end of the billing cycle you just have to pay a bill, which can be paid via several options, and most conveniently can be set to auto pay via your credit/debit card over the internet.

From the above, it is clear that while using this plan it is advisable to maintain self control as there is no set limit on your usage and if you don't exercise precaution, you can end up with a bill in which your total dues are astronomically high.

Most plans come in a format where you have to pay a fixed monthly rental plus for the services you use during the billing cycle. At the risk of massive generalisation, generally call rates are cheaper in a post

paid plan due to the initial rental. As a rule of thumb, if you are spending more than Rs. 800 a month on your prepaid vouchers then a research into your network provider's postpaid plan can usually result in more economical option.

If you are aiming for getting reimbursements via your company, college, school or any other organisation, it is advisable to go with a postpaid plan as you



A Trump (prepaid service of MTNL) recharge voucher

can produce a bill at the end, which in most cases is nearly essential to get the reimbursements. It is nearly impossible to get a bill for your prepaid vouchers as due to taxation issues there is an eternal fight as to whether prepaid vouchers should be counted as products or services.

7.2 Prepaid plans

As the name suggests, you have to pay for the service before you use it. That is, once enrolled in the connection you have to buy vouchers from a vendor, which will provide you minutes to talk or validity or both. It is generally easier to procure a prepaid connection as there is less paper work involved and there is no safety deposit fee to be paid at the time of enrollment. Though with the recent regulation from TRAI things have become more stringent on both sides of the fence, but still a prepaid connection remains more disposable.

Also, features such as roaming and ISD calling are pre-activated on prepaid plans, whereas for postpaid plans you have to generally pay a security deposit or call customer care to get the plan activated.

Prepaid connections since targeted primarily towards teenagers have lots of special discount vouchers. Some of them may be available in an analogous form for postpaid customers also, but are available in a vast and varied variety only for prepaid customers. They are available for various things but are primarily popular for the following 3 things:

SMS: Here on paying say an additional Rs. 30 you can send 500 local SMS within a stipulated period. Perfect for SMS addicts. (Figures are only for illustrative purposes).

STD: On purchase of this voucher, there is generally a drop in your STD call rates till the voucher is valid.

Local and night time: Here, availing this voucher, will either reduce your local and night time rates drastically or will you give you a certain number of free minutes of local calling or night time calling. There are vouchers available for group/friend talk, ISD rates and many others.

7.3 Corporate plans


They are usually postpaid plans available to corporates who have large connection requests. If your company or organisation has one, it is certainly advisable to take it as usually the rates are discounted due to bulk request and most such plans have group calling feature, where you can call your colleagues at ridiculously low rates such as 10p per minute. Such plans are also available to college students. If your company/organisation is of considerable size and still doesn't have any such facility a walk to the HR department asking them to enroll in such plan is a good idea.

7.4 Value added services

GPRS: This facility is available with all network operators across all geographical circles. Most network operators offer a “Zero Rental Plan”, where you don’t have to pay for any fixed amount but pay as use. General rates are 1 p or 2 p per Kb. If your monthly usage is under 5 MB, which is approximately checking your mail once a day or a quick Google or Wikipedia occasionally stick with it.

There are plans available for higher usage, where on paying a fixed amount such as Rs. 100 or so, you get some data transfer (say 50 MB) over which you will be charged in a fashion similar to the zero rental plan though maybe at a discounted rate. There are also plans available for unlimited usage, they generally cost you around Rs. 500 or up a month depending on your location, network operator and type of plan.

A small tip, most carriers don’t charge any roaming charges on GPRS service, so confirm the same and enjoy email on the move nationwide without paying extra roaming charges.

Others: These include facilities such as voice mail, roaming discounts, caller tunes, cricket updates, astrology update, stock updates, special ringtones and wallpapers, exam result and everything under the sun and beyond. We won’t discourage you from using them, but would such as to present you with the fact that network operators report the highest profit rate from providing you with these value added services. 

8 Mobile phone care



Various batteries available for mobile phones

After you have spent so much time, energy and money and choosing just the right phone which fits your needs and budget, you would want to extend its life to the maximum. This section offers simple tips to prolong the life your phone.

The battery

It forms the most important and also delicate part of your phone. The batteries powering the modern day phones are nothing short of a vastly underappreciated technological marvel, in a very small physical package they pack in a lot of power. Treating them with respect increase the life your battery.

Increasing efficiency

These tips are aimed towards extending your standby and talktime to the maximum

8 Mobile Phone Care

on a single charge.

- Backlight can be major drain of your battery juice. Keep it go auto off after 5 or 10 seconds.
- If possible switch to a place where there is better reception while talking. As your phone drains more battery in a low reception area, so if you are in a area with zero reception, your phone will keep looking for a signal and will drain your battery, therefore it is a good idea to switch the phone off in those areas.
- If you are using the loud profile and want only the ringtone to be there, you can save a lot of battery power by removing the vibrations that come along with the ring tone.
- Keep unnecessary connectivity options such as Bluetooth and Wi-Fi off when you don't need it. Wi-Fi, especially, is a major resource hog when it comes to battery consumption.
- When on low battery don't use the equaliser option while playing audio, it takes significant processing power to process the tracks in real time.
- Don't even touch the GPS option on your phone with a 3 metre pole if you are running low on battery power until absolutely essential to extend the standby time.
- Disabling animated screensavers and wallpapers and replacing them with static images will also help you increase your standby time.
- If your phone has multitasking then closing unnecessary applications which are running in the background is encouraged, as they all use processing power which in turns use more wattage from the battery.

Extending the overall life of your battery

The following tips shall ensure that your battery lasts a couple of months more than usual.

- Don't charge your phone for more than 12 hours from the wall charger and 1 hour from the car charger.
- If you are using a car charger, it is advisable to unplug your phone, while starting the ignition as a spike in the power supply during that time can cause damage to your charger and the battery of the phone, along with the internal circuitry of the phone itself. It is analogous to switching off home appliances during voltage fluctuations.
- If you think that it is a good idea to once in a while drain your phone out of battery and then charge your phone back to its full potential courtesy all the email forwards that you have got, you can't be more wrong. This was only valid for some Nickel-Cadmium (Ni-Cd) batteries and was basically to prevent the onset of memory effect. But most phones today use the Lithium-ion type batteries and this procedure is redundant.
- Keeping your phone away from extreme temperatures can work wonders in the

long run for the life of your battery.

8.1 Touchscreens

- If you are using a touch screen phone, (except the ones which uses a capacitive screen) consider using a screen guard as a must. Remember that they tend to wear out, so it is good idea to replace them every six months.
- If your phone comes with a stylus, it is highly recommended to use it instead of finger nails, never use ball point pen tips in place of a stylus.
- If you are an iPhone user or user of any other capacitive technology based device, don't use unnecessary pressure to interact with your phone, as registering of input is independent of pressure applied and actually works on the touch of your finger by detecting a change in the capacitance value.



Screen guard for an iPhone

8.2 Liquids

- Ladies putting that flimsy bottle of sunscreen or the moisturising cream in the same zipper compartment of your never-fill carry bag as your mobile phone is definitely a bad idea. A leak or puncture in the cosmetic tube can *kill* your phone.
- Simply not putting your phone on the counter when you hit the bar for a drink or two can go a long way in saving it from spill damage

Even after observing all precautions your phone actually gets drenched, then trying out the following steps patiently can help you revive it.

- Don't Switch it on. If your phone gets drenched, immediately switch it off and remove the battery. Keep the phone for drying under fan. Don't put it under direct sunlight, neither in a microwave. You should let your phone dry for at least 24 hours, every hour of patience shown here increase the chances of your phone being revived.
- Put it in box full of rice. Rice acts the same way as silica gel to absorb moisture.
- Use a Vacuum Cleaner as a suction device and not with the blower attachment. If you use the blower attachment or the hair dryer, the moisture doesn't really evaporate but further settles down into the corners of the phone.

If your phone gets drenched, immediately switch it off and remove the battery

8 Mobile Phone Care

- If the liquid is coffee or something similar it is a wise idea to cautiously wash the residue with either distilled water or alcohol.

8.3 Others

- Don't put your phone on the dashboard of your car. There is a decent chance that you will forget to carry it with you and if you have parked your car in the sunlight, your dear phone may fry to death. To give you an idea of how hot it can get inside, a quick search on “dashboard cookies” should suffice.
- It is a good idea to use a carry case; it shall ensure laws of gravity don't do much damage to your delicate phone. MoLife offers decent cases for almost all mobile models. Also quite a few high-end phones come with a carry case in the box, don't shy away from using them.
- Keys and phones don't go together well, never carry your home or car keys in the same jeans pocket or in the same compartment of your purse.
- If the person you are talking to on phone, often complains that he can't hear, there are chances that merely the microphone hole of your phone is filled with debris (happens often with iPhones). A can of compressed air or a very little vodka on a toothbrush should do the trick.

Observing these simple tips and precaution can go a long way in ensuring you have a long lasting healthy relationship with your mobile phone. **d**



A Mobile phone protective carry case.

9 Secret Codes

We now present some secret codes for you, which you can type into your mobile phone to reveal some extra information and perform certain tasks. Remember you may be voiding your warranties by using some of them and can end up with a dead brick (having given the official disclaimer, play respectfully and you shall be safe).

These codes (all but one) are manufacturer dependent and in certain cases network dependent, so your mileage with them may vary.

9.1 Universal

Starting with the universal ones

- ***#06#**

Typing this will reveal you IMEI (international mobile equipment identity) number across brands and

handsets (it is a regulation). Every phone has a unique number and technically if your phone is lost it is possible to trace it via this number even if the thief changes the network. In regions such as Europe this actually happens in practice, but in India things are a little slack. While buying a phone always match this number (which comes on screen) with the number printed on the backside (battery compartment) of your phone and the box in which the phone has come. All three should be same, indicating a genuine phone.

- **112**

This is not really a code but a emergency number. You will be able to dial this number even if the keypad is locked and will be able to dial independent of the presence of your network, till any cellphone network is available within range. This will also work if you don't have credit. In some states in India 108 is your emergency number, though it won't work without removing the keypad lock.



Go beyond the edge

9.2 Nokia

Codes for Nokia phones

- ***#7760#**

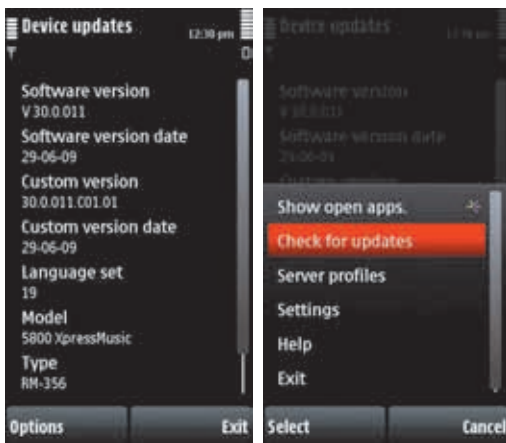
Reveals the production serial number, confirmed to work on Series 40 phones, doesn't work on all series 60.

- ***#7780**

Proceed with caution, this shall reset your phone to factory settings. Useful if you are debugging and are confused if the problem is software setting related or hardware.

- ***#0000#**

Very useful, tells you your current firmware version. In phones which support OTA (over the air) updating, you can simply update your phone firmware from the option menu that this will bring via GPRS/3G/Wi-Fi without connecting to the PC Suite.



The result of entering the ***#0000#**, showing details about the firmware

The option of OTA (Over the Air) update, comes up as an option menu

- ***#2820#**

Reveals your Bluetooth device address, some manual configuration needed for setting up your custom Bluetooth device or troubleshooting may require this information.

- ***#21#**

Allows you to check the number where "All Calls" are diverted to.

- ***#30#** and press dial

Lets you see the private number. Network dependent.

- ***#43#**

Allows you to check the "Call Waiting" status of your phone.

Press ***#0000#** to view your software version.
It tells you your current firmware version

- ***#61#**

Allows you to check the number that “On No Reply” calls are diverted to

- ***#62#**

Allows you to check the number that “Divert If Unreachable (no service)” calls are diverted to

- ***#67#**

Allows you to check the number that “On Busy Calls” are diverted to

- ****21*number#**

Turn on “All Calls” diverting to the phone number entered

- ****61*number#**

Turn on “No Reply” diverting to the phone number entered

- ****67*number#**

Turn on “On Busy” diverting to the phone number entered

- ***#92702689#**

Gives you the following information, but works only on very low-end and old nokia phones.

- Warranty
- Made
- Purchasing Date
- Repaired
- Serial No

9.3 Sony Ericsson

-> * <- <- * <- *

(-> means press joystick towards right and <- means left)

This brings up the secret menu in a Sony Ericsson phone which contains the following information and functions:

- Service Info
- Model Info
- Software Info
- Sim lock status
- Configuration
- Service Settings
- USB charging ON/OFF
- Service Tests

9 Secret Codes

- main Display
- LED/Illumination
- Keyboard
- Speaker
- Earphone
- Mic
- Vibrator
- Camera
- Accelerometer
- Memory Stick
- FM Radio
- Real Time Clock
- Total Call time
- Security

-> * <- <- * <- * (->
means press joystick
towards right and <-
means left)
This brings up the
secret menu in a Sony
Ericsson phone

Text Labels

- <- * * <-

SIMlockStatus. This is another good check before you buy any phone, especially second hand ones. If phone is SIM locked, you may not be able to switch to other GSM operators.

- 0#

This is quick way to dial the last dialed number

- <--0000-->

Changes back to default language and theme, very useful if the language is changed to something else, as at that time menu navigation is extremely difficult.

There are many more esoteric and nearly useless codes available which work on very selected section of devices, for the sake of generality we have omitted them over here.

Exercise caution while playing with all the above secrets codes and have fun. 